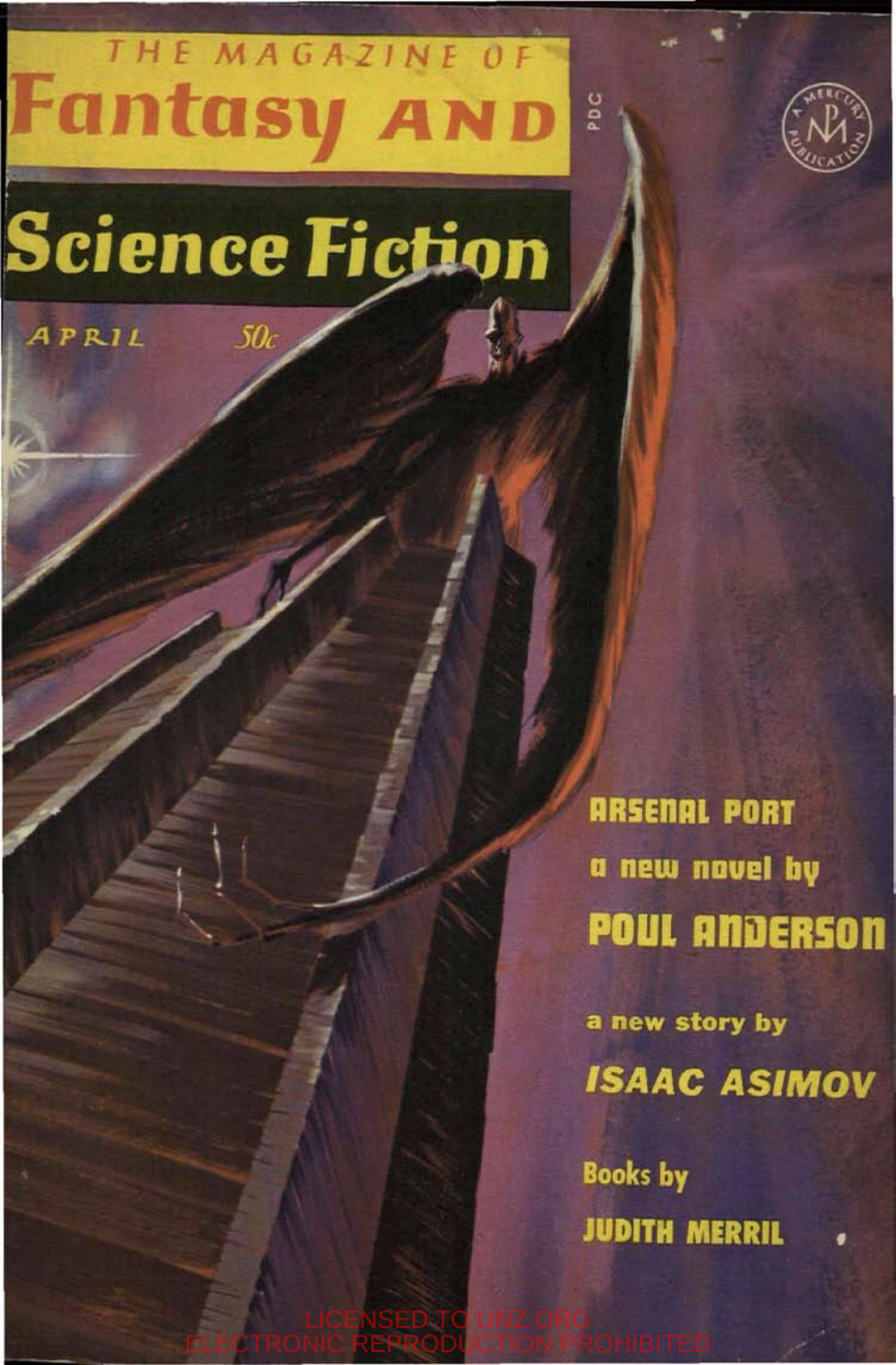

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Fantasy and Science Fiction

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Ted White, ASSISTANT EDITOR *Edward L. Ferman,* MANAGING EDITOR

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In this issue . . .

. . . appears the second in POUL ANDERSON's privateer trilogy. (The third will be published in our June issue.) Mr. Anderson's NO TRUCE WITH KINGS (June 1963) won last year's Hugo award for best short fiction. This series is equally exciting, and a flick of your eyes to the page opposite is guaranteed to provide an hour or so of pleasure. If you can only spare a few seconds just now, and if you share our affection for creatures that burble and whiffle, turn to page 59 . . . okay, back? Then you'll be pleased to learn that GAHAN WILSON's work will appear here regularly in the future.

Contest winners

Winners of our Univac-Unicorn short story contest (Dec. 1964) are: 1st prize—Herb Lehrman, Bayside, N. Y., ($100.00); 2nd prize—Greg Benford, Del Mar, Calif., (lifetime subscription); 3rd—Barbara P. Kerr, New York City; 4th—Elizabeth Daniels, Gettysburg, Pa. and 5th—Royce Burton, Jr., Austin, Texas. Congratulations! One or more of the winning stories will be published in our June issue.

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Spring is a time of movement, action, color—and F&SF's contribution to the season appears below. Reader, if you are bothered by an excess of spirit, pause long enough to read this story about star-ship Fox II, and its privateer captain, Gunnar Heim. They are outward bound on an incredible, impossible mission. The ship's drive is that of the future; the man's that of the distant past, a legacy of pirates who sailed in another day, when men weren't afraid.

ARSENAL PORT

by Poul Anderson

I

WHEN THE EARTH SHIP CAME, Gunnar Heim was bargaining with a devil-winged messenger from a nuclear smithy. The Aerie of Trebogir, for which Ro spoke, had weapons to sell; but there were conditions.

Nonhuman words hissed and whistled into the man's helmet pickup. Gregorios Koumanoudes translated into English. "—missile gets so large an initial velocity by drawing on the ship's own gravitors for a launch impetus."

Heim wished he could show horse trader reluctance, as by thoughtfully scratching his head. But it would look silly under present circumstances. Damn this need to wear airsuits! Even on the lift platform where he stood, which kept his weight Earth normal, and even with the strength of a two-meter-tall body which he had gotten back into first-class condition on the voyage hither, the mass of equipment he must carry was tiring. Originally he had planned to stay inboard, put a 3V two-way outside *Connie Girl,* and thus meet with the Staurni; but Koumanoudes warned him against it. "They'll respect you more, captain, for coming out into their own environment," the Greek had said. "Irrational, sure, but they make a big thing of physical toughness. And they'll give a better deal to someone they respect."

So—Heim scowled into harsh blue sunlight. "I see the advantage," he answered. "However, with my own maneuvering handicapped, I'd be a sitting duck."

Koumanoudes put his objec-

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tion into the language that prevails between Kimreth heights and the Iron Sea. Ro spread his taloned hands, a startlingly humanlike gesture. "The loss of maneuverability is negligible," he said, "as only a fractional second is needed for launch. Thereafter one immediately has full accelerative power available again. To be sure, the system must be synchronized with the engine complex, but it should not take long to make the necessary modifications on your ship."

Unconsciously, Heim glanced skyward. Somewhere beyond that deep purple vault, those icily blue-tinged clouds, *Fox II* swung in orbit around Staurn; tenders flitted back and forth with cargoes of hell, men and not-men swarmed over the cruiser, working together to fit her for war. There was not much left to do. And every nerve in him throbbed to be away. Each day he spent here, Alerion grew stronger, the cause of men on New Europe more hopeless.

Still, he was going to be dreadfully alone when he got there: one commerce raider, whose letters of marque depended on a legal technicality, bound off to harass an enemy whom most of Earth's politicians would rather placate. He could not hope for others to follow him. Ultimately, the liberation of that colony planet which Alerion had seized must depend on Earth herself setting the regular Navy in motion. And that would not happen soon, if ever.

Fox needed any microscopic advantage he could find for her. Like this missile sling which Ro claimed they could make in the Aerie of Trebogir. It did sound promising. . . . "How long to install?" Heim asked.

Again four claw fingers, set around the entire palm of the hand, gestured. "Some days. One cannot tell exactly without more knowledge than my kinfather's technologists possess about vessels of your particular class. May I suggest that the captain send his honored chief engineer to discuss such matters with our folk?"

"Um-m-m." Heim considered. His gaze went past Ro, to Galveth, who waited impassively for something to be said that might concern the Lodge. But the blast gun remained idly cradled in the observer's arms. If Galveth had any expression, it was of sleepiness, his yellow eyes drooping. A human could never be sure, though, what went on in the narrow Staurni skulls.

It was even hard to tell individuals apart. A common alienness outweighed variable details. Ro and Galveth were each about three meters long; but half that was in the thick, rudder-tipped tail, on whose coil the legless torso sat. The keelbone jutted like a

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prow. The face was sharp-muzzled, with wölfishly fanged mouth and small round ears. Its mask appearance came less from the dark band across the eyes than from the nostrils being hidden under the chin. A gray growth, neither hair nor feathers but something in between, covered the entire hide. No clothes were worn except two pouched belts crossing from shoulder to waist. All was overshadowed by the immense chiropteran wings, seven meters in span.

When you looked closely, you saw differences, mainly that Galveth had grown lean and frosty tinged while Ro was still in the fierceness of youth. And Galveth wore the gold-ornamented harness reserved for Lodge members, Ro the red and black geometry of Trebogir's pattern.

Heim turned to Koumanoudes. "What do you think?" he asked.

The stocky man shrugged. "I'm no engineer."

"But damnation, you and Wong have spent a couple of months here. You must have some notion who's honest and competent, who isn't."

"Oh, that. Sure. Trebogir isn't one of the robber barons. He has a good name. You can deal with him."

"Okay." Heim reached a decision. "Tell this messenger, then, that I am interested. I'll call C.E. down from *Fox* as soon as possible—right now he's got to help the contractor from the Hurst of Wenilwain install our fire control computers—and we'll come to the Aerie and talk further about the proposal."

"You can't be that blunt," Koumanoudes said. "Lodge members are, but they're different. A Nester is worse than an Arab or a Japanese for wanting flowery language." He tuned and began to form syllables.

Through the wind that rustled the low red-leaved forest surrounding the spaceport, through the beat of surf a kilometer distant, a sudden whine smote. It grew, became thunderous, the heavy air was split and a shadow fell across concrete field and lava-block buildings. Every head swung up.

A blunt-nosed cylinder was descending. The blue-white radiance was savage off its metal, spots danced before Heim's eyes when he turned them away. But he recognized the make. The heart jumped in his breast. "A spaceship! Human built—What's going on?"

"I . . . don't . . . know." Behind the dark faceplate, Koumanoudes' big-nosed countenance harshened. "Nobody said a word. Galveth!" He rattled off a question.

The Lodge agent made a bland reply. "He says he didn't think it mattered," Koumanoudes said.

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"Blaze," Heim said in anger, "he knows about the Aleriona crisis! He must have at least some inkling of our trouble with our own government. The Lodge must've stopped that ship for inspection no later than yesterday. Why haven't we been warned?"

"I'm not sure how much the Staurni ever understood," Koumanoudes said. "To them it's ridiculous that we couldn't arm ourselves at home and take off whenever we wanted. Besides, those people can't have any real weapons along, or they wouldn't've been allowed to land."

"They can have small arms," Heim snapped. "We do. Get rid of these bucks as fast as you can, Greg, and come inboard. I've got to alert the boys."

He strode rapidly across the platform to the landing ramp and up to the airlock. There he must fume while pumps replaced the atmosphere of Staurn with something he could breathe, and he himself was decompressed. The baffled rage that he had thought was left behind on Earth came back to possess him. So much could have happened in the couple of weeks that *Fox II* had needed to cross the hundred-odd light-years to this star, or in the three weeks that followed while she was being refitted. If the appeasement party had won out, if his privateering venture had been declared illegal—

Of course, he told himself, over and over, *that's not a Federation Navy ship. She's a small civilian ranger. But then, the Staurni don't let any warcraft but their own near this planet. If she's simply bringing an official order for me to come home. . . . Well, all right, face the question: what then? Do I go on anyway—as a pirate?*

Sickly: *Wouldn't be much use. The hope was to create a situation that Earth could take advantage of. If Earth refuses the chance and disowns us, we can only be troublemakers to Alerion, until at last we're cornered and killed. I'll never see Lisa again.* It was as if once more he could feel a small body pressed against him in farewell. *They'll tell her, the whole rest of her life, her father was a criminal.*

But maybe, maybe even a pirate could accomplish something. There was Drake of the Golden Hind*—He sailed in another day, when men weren't afraid.*

The inner door opened. He moved on into his yacht, that was now an auxiliary for the starship, and opened his helmet.

Endre Vadasz had the bridge. Technically he was no more than the steward; the life of a troubadour tramping the star ways had not equipped him to be anything else. But in practice he was the captain's right hand, and had been since he came back with his

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eyewitness account of what really happened on New Europe and thus planted the seed of this expedition. His thin dark face was turned outward, staring through the viewport as the other vessel neared in a gravitron-distorted shimmer of light. When Heim's boots rang on the deck, he didn't look around, but said tonelessly, "I have ordered the crew into battle gear, and brought your own rifle from your cabin."

"Good man." Heim took the weapon in the crook of an arm. There was assurance in that weight and solidity and beautiful deadly shape. It was a .30-caliber Browning cyclic, able to send forty rounds a minute through any atmosphere or none, the pride of his collection. Vadasz, also in a collapsed airsuit with faceplate unlocked, had settled for a laser pistol.

"I am not certain," the Hungarian remarked, "what six men can do if they try to storm us. Yonder ship can easily hold five times as many."

"We can stand 'em off till the boys arrive from *Fox*," Heim said, "and they total almost a hundred. Assuming the Lodge doesn't stop the fight."

"Oh, that I doubt," Vadasz murmured with a slight smile. "We aren't likely to damage their nice spaceport, and from everything I hear, they have no rules against bloodshed." He pointed to several winged shapes, wheeling black against the clouds over the western end of Orling island. "They will come enjoy the spectacle."

Heim directed the radioman to get in touch with *Fox*. It would take a while. The beam must go through a ground station and a couple of relay satellites. Wong was in orbit to interpret between human and native workers, while Sparks' command of the language was slight. And the newcomer would be down in another minute.

I'm borrowing trouble, Heim tried to believe. *Yet why would any Terrestrial come here, except in connection with me?*

To trade? Yes, yes, an occasional merchant does call, from Earth or Naqsa or one of the other spacefaring worlds. That's why the weaponmakers of Staurn will accept my Federation credits. But surely not while the Aleriona trouble is so near explosion.

Beside him, Vadasz was softly whistling. *The Blue Danube,* now of all times? Well, maybe he wanted to remember, while he still could. . . .

The least quiver ran through ground and hull and Heim's bones as the stranger touched jacks to concrete. Her shadow fell engulfingly over *Connie Girl.* Through the intercom he heard a few oaths from his men, Sparks' mumble at the transmitter, the snore of a nu-

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clear engine on standby. A ventilator gusted air across his cheeks, which were sweating.

When Koumanoudes clumped in, Heim spun about with a jerkiness that revealed to him how tense he was. "So?" the captain barked. "Did you get any information?"

The Greek looked relieved. "I think we can freefall, sir. According to Galveth, they want to stay a while, look around, and ask questions. A xenological expedition, in other words."

"To this planet?" Heim scoffed.

"Well after all, we are in Hydrus," Vadasz pointed out. "The trouble is going on in the Phoenix. Quite some distance from here."

"No further from The Eith than Alpha Eridani," Heim said, "where we had our biggest skirmish with the Aleriona. And that was many years ago. They're prowling through this whole sector. Besides, it takes time to organize an expedition. Why didn't we hear of it on Earth?"

"We were rather occupied," Vadasz said dryly. He went to the radiophone. "Shall I try to call them?"

"What?—Oh, yes. Of course." Heim swore at himself for forgetting so simple an act.

The connection was made at once. "MDS *Quest* of the U.S.A.," said a mild young man. "Captain Gutierrez is still busy, sir, but I can switch you to Dr. Bragdon. He's the head of the scientific team."

The release was like a blow. Heim sagged in his suit. "You're only here to make studies, then?"

"Yes, sir, for the University of Hawaii, under contract to the Federation Research Authority. One moment, please."

The screen flickered to a view of a cabin, crowded with references both full size and micro. The man in the foreground was also young, husky, with black hair and cragged profile. "Victor Bragdon speaking," he said, and then, his mouth falling open, "Good heavens! Aren't you Gunnar Heim?"

The privateer captain didn't reply. His own astonishment was too much. The woman behind Bragdon leaned over the man's shoulder and met Heim's stare with wide hazel eyes. She was tall; an informal gray zipsuit clung to a figure strong and mature. Her face had strength too, rather than conventional good looks: straight nose, wide mouth, arching bones, framed by curly chestnut hair. But some years back it had troubled his sleep. When he saw the name Jocelyn Lawrie on the letterhead of a flyer from World Militants for Peace, an old hurt had awakened, and he went on still more intensely with his preparations for war.

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"Gunnar!" she exclaimed. "Of all people—How's your daughter? I was so horrified when I heard—"

"She's all right now," he said automatically. Surprise faded. Suspicion tightened his muscles. "What are you doing here?" he rapped.

II

Afterward he remembered with irony and sadness how careful he had been. Pleading an urgent requirement for his presence on *Fox II,* he raised his yacht within the hour. But Koumanoudes volunteered to stay behind, aboard the *Quest* on a "courtesy call." Heim knew the Greek had done a good job of preliminary arrangement-making on Staurn; how good he would be with his fellow humans was uncertain, but there was scant choice. It had to be him or Wong, the only ones who spoke the local language fluently and hence could use the spaceport's eavesdrop-proof maser line.

His report came after two watches. "They're clean, skipper. I was toured around the whole ship and talked to everybody. There're five in the crew, plus captain, mate, and C.E. They're plain spacehands, who signed on for this cruise the same as they would for any other exploratory trip. You can't fake that. Anybody who's so good an actor works on 3V, not in the black."

"They don't have to act," Heim said. "They only have to wear a poker face."

"But these bucks didn't. They swarmed over me, asking every kind of question about us. On the whole, they thought we had a hell of a fine idea here. A couple of them wished they'd joined us."

"Uh-huh. I'm not surprised. The common man often shows more common sense than the intellectual elite. But wait, now, do you include their officers in this?"

"The engineer, yes. Captain Gutierrez and the first officer . . . well, they were stiff as meteorite plating. I don't know what they think. Probably they don't like us on principle, figure war should be left to the regular Navy. But I did make an excuse to see the articles of the expedition. It's bona fide, official papers and everything."

"How about the scientific passengers?"

"A mixed bag. I think Bragdon and Mrs. Lawrie must be the only ones who've ever been out of the Solar System. There's another xenologist, a semanticist, a glossanalyst, a biologist, and half a dozen graduate students to help. I gather none have visited Staurn before."

"Odd."

"Charlie Wong and I hadn't either, boss, when you sent us off. They did the same as us, boned up on what information was

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available and learned the main language with RNA-electro cramming, en route. Anyhow, I can tell you there's nothing to fear from these academic types. I don't think any but Bragdon can handle a gun. They don't much care for us and what we stand for, so relationships were a tad strained even if nothing rude got said. But they're no threat."

"They all feel this way?" Heim asked, with a curious little sinking in his spirit.

"No, funny thing, Bragdon and Mrs. Lawrie were both friendly. He remarked once he disagrees with your ideas but has a lot of respect for your guts. And she said she hopes you can come back soon."

"I can," Heim said softly. "Oh, I can."

An hour later, *Connie* accelerated planetward.

Seated on the bridge, Heim listened to the thrum of the yacht and his own pulse, underlying the flamenco that leaped from Vadasz's guitar beside him. For a while neither man spoke, nor did their eyes leave the spectacle in the viewports.

Two and a fifth times the diameter of Earth, nine and a half times the mass, Staurn rolled immense against darkness. The seas shone royal blue, the continents, blurred by snow-colored cloud bands, were ocher and cinnabar. Along the horizon, atmosphere made a violet rim; over the whole, under the irradiation of a hot F5 sun, ran a fluorescence which near the poles became great banners of aurora, shaken aloft into space. Two moons were visible beyond, glacially luminous, and further yet there glittered strange constellations.

"When I see something like that," Heim murmured at length, half to himself, "I wonder."

Vadasz stopped playing and cocked a birdlike glance at him. "What do you wonder?"

"Why the hell we waste time hating and killing, that we might use to—Argh, never mind." Heim got out his pipe. "It only takes one to make a quarrel."

Vadasz studied him. "I've come to know you somewhat well, Gunnar," he said. "You are not given to the role of Hamlet. What is the real trouble?"

"Nothing!"

"Ah. Excuse me if I pry, but this whole enterprise depends on you. Is it the lady's unexpected arrival that is so disturbing?"

"A surprise, no more. We used to be friends." Heim became busy loading his pipe. The Magyar's steady look forced him to explain further. "My wife and I had quite a bit to do with the Lawries, years ago. They went off to Ourania in the Epsilon Indi System shortly before Connie died, to establish a machine tool factory in the colony there. Things can't

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have worked out too well, because she came back last year, divorced. The conflict with Alerion was already serious, even if they hadn't yet attacked New Europe, and she got active in the peace movement. It had her shuttling around the world, so we only met again a few times, briefly, at large loud parties. I half doubted she'd speak to me now, after what I've done."

"And are pleasantly amazed, eh? She is indeed attractive. You must find her especially so."

"What do you mean?" Heim bridled.

"Oh. . . ." Vadasz's grin was disarming. "One does not wish to get too personal. However, Gunnar, busy though you were, I felt you were mistaken not to, um, prepare yourself for a long cruise in strictly male society."

Heim grinned back. "I'd trouble enough concocting stories to explain your absences. How could I tell Lisa her hero was out tomcatting?"

"*Touché!*" Vadasz went tomato red and attacked his guitar with great vigor.

But he has a point, maybe, Heim thought. *I could have—well, Connie would've understood. The way she understood about Jocelyn. Lord knows there've been other women since —Maybe I was thinking too hard about Madelon on New Europe. Damned foolishness. Or—I don't know, I'm all confused.*

That was what he remembered, afterward.

—His finger was not quite steady when he pressed the button on her door. She opened it while the chime was still sounding. "Gunnar," she said, and took both his hands. "I'm so glad you could come."

"You were nice to invite me," he said.

"Nonsense. When two old friends meet again, halfway between home and the Southern Cross, what else do they do but have a private gabfest? Come in, man."

The door closed behind them. He looked around. Her cabin was large and comfortable, and she had made it her own. He recognized some things from her lost San Francisco home—a Matisse and a Hiroshige reproduction, some worn volumes of Catullus, Yeats, Tagore, Pasternak, Mosunic-Lopez, the flute he had once loved to hear her play—and there were a few souvenirs of her years in the Epsilon Indi System, less from Ourania than from stark New Mars. His attention returned to her and stayed. She had on an electric blue dress and a Gean necklace of massive silver. The outfit was at once quiet and stunning. Or was that simply the contents?

Whoa, boy! he checked himself. Aloud: "You haven't changed."

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"Liar. But thanks." Her eyes dwelt on him. "You have, anyway. Tired and bitter."

"Why, no, I feel happier now than—" His protest was cut off. She let his hands go and went to a table where bottles and ice stood.

"Let's do something about it," she said. "As I recall, you're a Scotch drinker. And here's some sho-nuff Glenlivet."

"Eh? You always preferred light wine."

"Well, Vic—Dr. Bragdon, you know—he shares your taste, and very kindly gave us this from his locker." She poured. For a moment the clear gurgle was the only sound in the universe.

What the devil right have I to feel jealous? "I'm not sure what, uh, you're doing out here with him."

"Officially I'm secretary to the expedition. I have such skills from my job before I married, and got the rust off them working for the peace movement. Then too, I've had experience on other planets, including planets where you need special equipment to live. I used to go to New Mars quite often, ostensibly with Edgar's mineral prospectors, actually to get away—No matter. That's past. When I heard about this expedition, I applied for a berth and, rather to my surprise, got it. I suppose that was partly because most qualified people were scared to come so near the big bad Aleriona, partly because Vic knew me and felt I could handle it." She reached him a glass and raised her own. "Welcome aboard, Gunnar. Here's to the old days."

He clinked rims, wordless.

"When life was simple and splendid," she added. Tossing off a sip of her Chablis, she toasted again, defiantly. "And here's to the future. We'll make it the same."

"Well, let's hope so." His mouth creased upward. She'd always been overly dramatic, but his own stolidity had found it a trait more endearing than otherwise.

"Sit down." She waved him to her lounger, but he took a chair instead. Jocelyn chuckled and relaxed in the form-fitting seat. "Now," she said, "tell me about yourself."

"Didn't you get a bellyful of me in the news?"

"There sure was plenty." She clicked her tongue. "The entire Solar System in an uproar. Half the people wanted to hang you and H-bomb France for commissioning you. The rest—" Her humor waned. "I hadn't known there was so much popular support for your side of the issue. Your departure crystallized it, somehow."

He gathered his nerve and said, "Frankly, that's what I

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hoped. One decisive gesture, to cut through that wretched muddle. . . . Okay, you can throw me out."

"No, Gunnar. Never." She leaned over and patted his hand. "I think you're wrong, horribly wrong, but I never doubted you mean well."

"Same for you, of course. Wish I could say likewise for some of your associates. And mine, I must admit. I don't like having the approval of some pretty nasty fanatics."

"Nor I. The Militants—I quit them when they started openly applauding mob violence."

"They tried to blackmail me through my daughter," he said.

"Oh, Gunnar!" Her clasp tightened over his knuckles. "And I never came to see you while she was missing. There was this work for the movement, way off on Venus, and by the time I got back and heard, everything was finished and you were gone. But . . . are you serious? Did Yore's people really—"

"I fixed that," he said. " 'Druther not say any more. We had to keep it out of the news. I'm glad, Joss, you broke with them."

"Not with what they meant in the beginning, though," she said. Tears glimmered suddenly in the long hazel eyes; he wondered on whose account. "Another reason I wanted to get off Earth. Everything was such a ghastly mess, no clear rights or wrongs anyplace you searched." She drew a breath before continuing, with swift earnestness.

"But can't you see what harm the French have done? It looked as if the dispute with Alerion could be settled peacefully. Now the peacemakers have been tied in a legal knot, and it's all they can do to prevent the extremists from taking over control of Parliament. The Aleriona delegation announced they weren't going to wait any longer. They went home. We'll have to send for them when our deadlock is broken."

"Or come after them, if it breaks *my* way," he said. "What you can't see, you won't see, is that they've no intention of making any real peace. They want Earth out of space altogether."

"Why?" she pleaded. "It doesn't make sense!"

He frowned into his glass. "That's something of a puzzle, I admit. It must make sense in their own terms; but they don't think like us. Look at the record, however, not their soft words but their hard deeds ever since we first encountered them. Including the proof that they deliberately attacked New Europe and are deliberately setting out to exterminate the French colonists there. Your faction denied the evidence; but be honest with yourself, Joss."

You be honest too, Gunnar—

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No, look at me. What can a single raider do but make the enmity worse? There aren't going to be any more privateers, you realize. France and her allies have been able to keep Parliament from illegalizing your expedition, so far. But the Admiralty has frozen all transfers of ships, and it'll take more of a legislative upheaval than France can engineer to get that authority out of its hands. You'll die out there, alone, for nothing."

"I'm hoping the Navy will move," he said. "If, as you put it, I make enmity worse—Uh-uh, not a delusion of grandeur. Just a hope. But a man has to do what little he can."

"So does a woman," she sighed.

Abruptly, sweeping to her feet, taking his glass for a refill, smiling with an effort but not as a pretense: "No more argument. Let's be only ourselves this evening. It's been such a long time."

"Sure has. I wanted to see you, I mean really see you, when you came back to Earth, but we were both too busy, I guess. Somehow the chance never seemed to come."

"Too busy, because too stupid," she agreed. "Real friends are so rare at best. And we were that once, weren't we?"

"Rawthuh," he said, as anxious as she to walk what looked like a safe road. "Remember our junket to Europe?"

"How could I forget?" She gave him back his glass and sat down again, but upright this time, so that her knee brushed his. "That funny little old tavern in Amsterdam, where you kept bumping your head every time you stood up, till finally you borrowed a policeman's helmet to wear. And you and Edgar roared out something from the Edda, and —But you were both awfully sweet outside Sacre Coeur, when we necked and watched the sun rise over Paris."

"You girls were a lot sweeter, believe me," he said, not quite comfortably. A silence fell. "I'm sorry it didn't last between you and him," he ventured.

"We made a mistake, going outsystem," she admitted. "By the time we realized how much the environment had chewed our nerves, it was too late. He's got himself quite a good wife now."

"Well, that's something."

"What about you, Gunnar? It was so dreadful about poor Connie. But after five years, haven't you—?"

"After five years, nothing," he said flatly. "I don't know why."

She withdrew herself a little and asked with much gentleness, "I dare not flatter myself, but could I be to blame?"

He shook his head. His face burned. "No. That was over with long ago. Let's discuss something else."

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"Sure. This is supposed to be a merry reunion. *A nuestra salud.*" The glasses clinked again.

She began to talk of things past, and presently he was chiming in, the trivia that are so large a part of friendship—do you remember, whatever became of, we did, once you said, we thought, do you remember, and then there was, we hoped, I never knew that, do you remember, do you remember?—and the time and the words and the emptied glasses passed, and finally somehow she was playing her flute for him, *Au Clair de la Lune* and *Gaudeamus Igitur, September* and *Shenandoah,* Pan-notes bright and cool through the whirl in him, while he had moved to the lounger and lay back watching the light burnish her hair and lose itself in the deep shadows below. But when she began *The Skrydstrup Girl—*

"Was it her that I ought to have loved, then,
In a stone age's blossoming spring—"

the flute sank to her lap and he saw her eyes shut and her mouth go unfirm.

"No," she said. "I'm sorry. Wasn't thinking. You taught it to me, Gunnar."

He sat straight and laid a clumsily tender hand on her shoulder. "Forget that business," he said. "I should've kept my big mouth shut. But there was no real harm done. It was no more than . . . than one of those infatuations. Connie didn't hold it against you. She nursed me through the spell okay."

"I wasn't so lucky," she whispered.

Dumfounded, he could only stammer: "Joss, you never let on!"

"I didn't dare. But that was the real reason I talked Edgar into leaving Earth. I hoped—Gunnar, when I came back, why were we both such idiots?"

Then suddenly she laughed, low in her throat, came to him and said, "We're not too late, are we? Even now?"

III

Staurn rotated once in about eighteen hours. Seven such days had passed when Uthg-a-K'thaq finished work on the naval computers and rode a tender down to Orling spaceport.

As his huge form wallowed into the yacht's chartroom, Endre Vadasz, who had been waiting for him, backed up. *Phew!* the minstrel thought. *That swamp stench! If only we had been able to get a human chief engineer, not a creature from Naqsa, beached and desperate for a job. . . . Stop it, you. Humans are prejudiced against Naqsans less because they stink, less because they look like an unseemly cross*

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between a walrus and a nightmare, than because they are tough commercial competitors. If the crew is gradually, grudgingly coming to admit he is decent and capable, I can do no less. How do I look and smell to him?

"Hallo, C.E.," he greeted. "I hope you are not too tired to depart at once. We have spent too much time here already."

"Quite," replied the rumbling, burbling voice. "I am imwatient as you wy now. Ewerything else can 'roceed without me and, I weliewe, reach com'letion simultaneously with this swecial missile tur-ret. That is, iw the Staurni system is as good as claimed."

"Which is what you are supposed to decide," Vadasz nodded. Another irritating thing about Naqsans was their habit of solemnly repeating the obvious. In that respect they were almost as bad as humans. "Well, I've seen to your planetside supplies. Get your personal kit together and meet us at the lift platform outside in half an hour."

"Us-s-s? Who goes to this nest?"

"You and the skipper, of course, to make decisions, and Gregorios Koumanoudes to interpret. Myself . . . ah, officially this falls in the steward's department also, since the extra armament will affect stowage. But in practice the steward's department is idle, bored, and in dire need of a jaunt. Then there are two from the *Quest,* Victor Bragdon and Jocelyn Lawrie."

"Why come they with?"

"They're here for xenological research, you know. Accompanying us on a business trip to an important kinfather is a unique opportunity to observe laws and customs in action. So Bragdon offered to lend us one of his flyers, provided he and the woman could ride along. He wanted several of his people, actually, but Nesters limit the number of visitors at one time. Suspicious brutes. In any event, by using the flyer, we save this yacht for shuttle work and so expedite our own project."

"I scent. No, you say 'I see' in English." Uthg-a-K'thaq's tone was indifferent. He turned and slap-slapped on webbed feet toward his cabin.

Vadasz looked thoughtfully at his back until he had disappeared. *I wonder how much of our interhuman quarrels and tensions come through to him,* the Hungarian reflected. *Perhaps none. Surely he will think the business between Gunnar and Jocelyn is utter triviation, if he even notices.*

And he may well be right. Thus far, at least, it has only amounted to Gunnar's being often absent from our vessel. Which has done no harm at the present stage of things. The men gossip,

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but the tone I hear is simple good-natured envy. For myself, I am the last to begrudge a friend what scrap of happiness he can stumble upon. Therefore—why does it make me uneasy, this?

He threw off worry and pushed buttons on the radiophone extension. A middle-aged scholarly-looking man glared from *Quest*'s saloon.

"Good day, Dr. Towne," Vadasz said cheerily. "Would you please remind Captain Heim that we're leaving in half an hour?"

"Let him remind himself," the glossanalyst snapped.

"Do you so strongly oppose our little enterprise over here that you will not even give a man an intercom call?" Vadasz leered. "Then kindly remind Mme. Lawrie."

Towne reddened and cut the circuit. He must have some very archaic mores indeed. Vadasz chuckled and strolled off to complete his own preparations, whistling to himself.

"Malbrouck se va-t-en guerre."

—And aboard the *Quest,* Heim looked at a bulkhead clock, stretched, and said, "We'd better start."

Jocelyn laid a hand on his roan hair, another beneath his chin, and brought the heavy-boned homely face around until it was close to hers. "Do we have to?" she asked.

The trouble in those eyes hurt him. He tried to laugh. "What, cancel this trip and lose Vic his data? He'd never forgive us."

"He'd be nearly as happy as I. Because it's far more important that . . . that you come out of this lunacy of yours, Gunnar."

"My dear," he said, "the only thing that's marred an otherwise delightful time has been your trying and trying to wheedle me into giving up the raider project. You can't. In the old Chinese advice, why don't you relax and enjoy it?" He brushed his lips across hers.

She didn't respond, but left the bed and walked across the cabin. "If I were young again," she said bitterly, "I might have succeeded."

"Huh? No, now, look—"

"I am looking." She had stopped before a full-length optex beside her dresser. Slowly, she ran her hands down cheeks and breasts and flanks. "Oh, for forty-three I'm quite well preserved. But the crow's feet are there, and the beginnings of the double chin, and without clothes I sag. You've been—good, kind—the last few days, Gunnar. But I noticed you never committed yourself to anything."

He swung to his own feet, crossed the intervening distance in two strides, and towered over her; then didn't know what to do next. "How could I?" he settled for saying. "I've no idea what

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may happen on the cruise. No right to make promises or—".

"You could make them conditionally," she told him. The moment's despair had left her, or been buried. Her expression was enigmatic, her tone impersonal. "'If I come home alive,' you might say, 'I'll do such and such, if you're agreeable.'"

He had no words. After some seconds she breathed out and turned from him. Her head drooped. "Well, let's get dressed."

He put on the one-piece garment which doubled as underpadding for an airsuit, his motions automatic, his mind awash. *Okay, what* do *I want? How much of what I felt (do I still feel it?) was genuine and how much was just a grab at the past when lonesomeness had me off balance?*

I plain don't know.

His bewilderment didn't last long, because he was the least self-analytical of men. He shoved his questions aside for later examination and, with them, most of the associated emotions. Affection for Jocelyn remained in the forefront of his awareness, along with regret that she had been hurt and a puzzled wish to do something about it; but overriding all else was eagerness to be away. He'd cooled his heels long enough on this island. The flight to Trebogir's would be a small unleashing.

"C'mon," he said with reborn merriment. His hand slapped the woman playfully. "Should be quite a trip, you know."

She turned about. Grief dwelt in her eyes and on her lips. "Gunnar—" She must look down at her fingers, tensed against each other. "You really don't think I'm . . . a fool at best, a traitor at worst . . . for not wanting a war . . . do you?"

"Hvad for pokker!" he exclaimed, rocked back. "When did I give you that idea?"

She swallowed and found no reply.

He took her by the forearms and shook her gently. "You are a fool if you think I ever thought so," he said. "Joss, I don't want war any more than you. I believe a show of force now—one warning snap of teeth—may head off a fatal showdown later. That's all. Okay, you have a different opinion. I respect it, and I respect you. What've I done to make you suppose anything different? Please tell me."

"Nothing." She straightened. "I'm being silly," she said in a machine voice. "We'd better go."

They went silently downhall. At the locker outside Boathouse Three, Victor Bragdon was donning his airsuit. "Hi, there," he called. "I'd begun to wonder what was keeping you. One of your men delivered your staff last watch, Gunnar. Good thing, too. You'd

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never fit into anybody else's outfit."

Heim took the stiff fabric, zipped it shut around himself, and put on gloves and ankle-supporting boots with close attention to the fastenings. If the oxygen inside mingled with the hydrogen outside, he'd be a potential torch. Of course, in a flyer it was only a precaution to wear a full outfit; but he'd seen too often how little of the universe is designed for man to neglect any safety measure. Connecting the helmet to high-pressure airbottles and recycler tank, he hung the rig from his shoulders, but left the valves closed and the faceplate open. Now, the belt of food bars and medicines; canteen; waste unit; not the machine pistol, for you did not come armed into a Nest. . . . He saw that Jocelyn was having some trouble with her gear and went to help.

"It's so heavy," she complained.

"Why, you wore much the same type on New Mars," Heim said.

"Yes, but that was under half an Earth gravity."

"Be glad we aren't under the full Staurnian pull, then," Bragdon said genially. He bent to pick up a carrying case.

"What've you got there?" Heim asked.

"Extra camera equipment. A last-minute thought. Don't get alarmed, though. The field survival kit is aboard and double checked." Bragdon was still grinning as he walked to the entry lock. His aquiline profile was rather carefully turned toward Jocelyn. Heim felt amused.

The boathouse seemed cavernous. The space auxiliary intended to rest here had been replaced by three atmospheric flyers built for work on subjovian planets; and one of them was out on a preliminary mapping flight. The humans wriggled through the lock of another bulky fuselage and strapped in, with Bragdon at the controls. He phonespoke to his dispatcher. The boathouse was evacuated, Staurn's air was valved in, the outer doors opened. With a whirr of power, the vehicle departed.

It set down again immediately, to let in Vadasz, Koumanoudes, and Uthg-a-K'thaq. The Naqsan looked still more ungainly in his own airsuit than he did nude, but it confined most of his odor. Bragdon made a last check of his instruments and lifted skyward.

"I'm excited as a boy," he said. "This'll be the first real look I've had at the planet."

"Well, you should be able to play tourist," Koumanoudes said. "No bad weather's predicted. 'Course, we wouldn't be aloft anyway in a Staurnian storm. Feerocious."

"Indeed? I thought wind veloc-

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ities were low in a high-density atmosphere."

"Staurn's isn't that dense. About three times Earth pressure at sea level, with gravity accounting for a good deal of it. Also, you've got water vapor, which rises to breed thunderstorms. And so damn much solar energy."

"What? Jocelyn cast a surprised glance aft, not too near the morning sun. At half again the distance of Sol from Earth, the disc had slightly less angular diameter; and, while it was nearly twice as brilliant, throwing a raw blue-tinged light across the world, its total illumination was likewise a little inferior to home. "No, that can't be. Staurn gets only—what is it?—twenty percent more irradiation than Earth."

"You forget how much of that is ultraviolet," Heim reminded her, "with no free oxygen to make an ozone barrier."

"A poor site for a nudist colony," Vadasz said. "If the hydrogen, helium, and nitrogen don't choke you, or the methane and ammonia poison you, the UV will crisp you like a steak."

"Brrr. When it's so beautiful, too." Jocelyn pressed her nose against the port by her seat and stared downward.

They were high now, with Orling dropping behind at supersonic speed. The island reared Gibraltar-like from an indigo sea, beaches obsidian black, land turned a thousand subtle shades of red by its forest. There was a final glimpse of a radar, skeletal at the spaceport, then that scar was lost to view and one saw only a great peace brooding under westward cliffs of cumulus. On the edge of vision, kilometers away, a flock of Staurni winged in a V on an unknown errand.

As if to escape some thought, Jocelyn pointed at them and said, "Pardon me if I'm dumb, but how can they fly? I mean, aren't hydrogen breathers supposed to have less active metabolisms than oxygen breathers? And is the air pressure enough to support them against nearly twice Terrestrial gravity?"

"They got bird-type bones," Koumanoudes explained.

"As for the energy consideration," Heim added, "it's true hydrogen gives less energy per mole than oxygen, reacting with carbon compounds. But there are an awful lot of hydrogen molecules in a lungful, here. Besides, the enzyme systems are efficient. And —well, look. Staurnian plants photosynthesize water and methane to get free hydrogen and carbohydrates. Animals reverse the process. Only with that flood of ultraviolet on them, the plants build compounds more energy-rich than anything on Earth."

"I see, I suppose." She relapsed into her brown study.

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The island fell below the wide horizon. They flew over wine darkness, streaked with foam, until the mainland hove into sight. There mountains climbed and climbed, red with wilderness at the foot, gray and ruggedly shadowed above, snowpeaked at the top. Sunlight glinted off a distant metallic speck. Heim tuned his and Jocelyn's viewport to full magnification. The speck became a flyer, of gaunt unhuman design, patrolling above a cluster of fused-stone towers that clung to a precipice a kilometer over the surf. "The Perch of Rademir," he said. "Better jog a little further south, Vic. I'm told he's somewhat peeved at us, and he just might get an impulse to attack."

Bragdon adjusted the autopilot. "Why?"

"He wanted to sell us warheads, when Charlie Wong and I arrived to make arrangements," Koumanoudes said. "But the Roost of Kragan offered us a better price."

Bragdon shook his head. "I really don't understand this culture," he said. "Anarchy and atomic power. They can't go together."

"What?" Vadasz tautened in his seat. "There is quite a literature on Staurn," he said very slowly. "Have you not even read it?"

"Oh, sure, sure," Bragdon answered in haste. "But it's a jumble. Nothing scientific. My own field work was mainly on Isis."

"We aren't the best-prepared expedition that ever went out," Jocelyn added. "Quite hurriedly organized, in fact. But with all the trouble in this sector, the Research Authority decided it was urgent to get some solid information on the space-traveling societies hereabouts."

"The Staurni aren't that, exactly," Heim said. "They have the capability, but use it only for planetary defense purposes. They'll trade with visitors, but aren't interested in looking for business themselves."

"They must once—Say." Bragdon turned in his seat to face the others. "We've time to kill. Why don't you give us your version of the situation here? Even when I've read it before, it's helpful to have the material put in different words."

Vadasz narrowed his eyes and remained silent. Heim was chiefly conscious of Jocelyn's glove resting on his. He thought that somehow she was pleading with him. To keep away from the thing that divided them? He leaned back, easing the weight of his air equipment onto the rest bracket, and said:

"I'm no expert. But as I understand it, the Staurni are a rare thing, a strictly carnivorous intelligent race. Normally carnivores specialize in fighting abil-

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ity rather than brains, you know. I once talked with a buck who'd visited here and poked around a little. He said he'd noticed fossil outcrops that suggested this continent was invaded long ago by a bigger, related species. Maybe the ancestral Staurni had to develop intelligence to fight back. I dunno. However it happened, you've got a race with high-powered killer instincts and not gregarious. The basic social unit is, uh, a sort of family. A big family, with a system of companionate marriage so complicated that no human has ever figured it out, plus retainers with their own females and cubs; but still, a patriarchal household dominated by one big, tough male."

The flyer rocked in a gust. Heim peered out. At their present speed, they were already crossing the spine of the mountains. In the west he saw foothills, tumbling off to the red and tawny plain of the Uneasy Lands.

"I shouldn't think that would make for advance beyond savagery," Bragdon remarked.

"They managed it on Staurn, for a while. I don't know how. But then, does anybody know for sure what the evolutionary laws of human civilization are? Maybe being winged, more mobile than us, helped the Staurni. In time they got a planet-wide industrial culture, split into confederations. They invented the scientific method and rode the exponential curve of discovery on up to nuclear engines and gravitronics."

"I think," Uthg-a-K'thaq grunted, "those nations were wuilt on conquest and slawery. Unnatural, and hence unstawle."

Heim gave the tendrilled face a surprised glance, shrugged, and went on: "Could be. Now there is one stabilizing factor. A Staurni male is fiercer than a man during his reproductive years, but when he reaches middle age he undergoes a bigger endocrine change than we do. Without getting weak otherwise, he loses both sex drive and belligerence, and prefers to live quietly at home. I suppose under primitive conditions that was a survival mechanism, to give the females and cubs some protection around the nest while the young males were out hunting. In civilization it's been a slightly mellowing influence. The oldsters are respected and listened to, somewhat, because of their experience.

"Nevertheless, the industrial society blew itself apart in a nuclear war. Knowledge wasn't lost, nor even most of the material equipment, but organization was. Everywhere the Staurni reverted to these baronial Nests. Between the productivity of its automated machines and the return of big game to hunt, each such community is damn near independent.

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Nobody's interested in any more elaborate social structures. Their present life suits them fine."

"What about the Lodge?" Jocelyn asked.

"Oh, yes. There has to be some central group to arbitrate between Nests, defend the planet as a whole, and deal with outworlders. The Lodge grew up as a—I suppose quasi-religious organization, though I don't know a thing about the symbolism. Its leaders are old males. The more active jobs are done by what you might call novices or acolytes, younger sons and such, who sign on for the adventure and the concubines and the prospect of eventually becoming full initiates. It works pretty well."

"It wouldn't with humans," Bragdon said.

"Yeh," Koumanoudes answered, "but these people aren't human."

"That's about everything I know," Heim said. "Nothing you haven't found in books and journals, I'm sure."

He looked outside again. The prairie was sliding swiftly beneath; he could hear the whistle and feel the vibration of their passage. A herd of grazing beasts darkened the land and was gone. Eastward the last mountaintops vanished. No one spoke for a considerable period. Heim was in fact startled to note how much time had gone by while they all sat contemplating the view or their own thoughts, before Bragdon ended the silence.

"One item I have not seen explained," he said. "Apparently each Nest maintains a nuclear arsenal and military production equipment. What *for*?"

"To fight," Koumanoudes said. "They get an argument the Lodge can't settle, like over territory, and hoo! They rip up the landscape. We'll probably see a few craters."

"No. That sort of insanity smashed their civilization."

"The last phase of their civilization, you mean," Heim said. "The present one isn't vulnerable. A Nest is mostly underground, and even the topside buildings are nearly blastproof. Radiation affects a Staurni a lot less than a human, he gets so much of it in the normal course of life; and they have medicines for an overdose here, same as us. And there are no incendiary effects, not in a hydrogen atmosphere. In fact, before atomic energy, the only way to smelt metals was to use a volcanic outlet—which there are plenty of on a big planet with a hot core."

"So they have no restrictions," Jocelyn murmured. "Not even on selling the things offworld, for others to kill with."

"We've been over that ground too mucking often," Koumanoudes growled.

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"Freefall, Greg," Heim warned. The woman's face was so unhappy.

Koumanoudes shifted in his seat, glared out, and grew suddenly rigid.

"Hey!" he barked.

"What's the matter?" Bragdon asked.

"Where do you think you're headed?"

"Why, to the Aerie of Trebogir."

The Greek half rose. His forefinger stabbed at the bow viewports. Above the horizon, ghostly in its detachment, floated a white cone. The plain beneath rolled down toward a thread which wound blinding silver through a valley where cloud shadows ran.

"What the hell!" he exploded. "That's the River Morh. Got to be. Only I know the map. Trebogir doesn't live anywhere in sight of a snowpeak. It must belong to Kimreth upland. We're a good five hundred kilometers north of where we should be!"

Sweat sprang forth on Bragdon's forehead. "I did set a roundabout course, to get a better look at the countryside," he admitted.

"And never told us?" Koumanoudes yanked at his harness. "I should've noticed where the sun is. Get away from that pilot board. I'm taking over."

Heim's eyes swung to Jocelyn. Her fists were clamped together and she breathed in deep gulps.

Bragdon darted his hand into the carrying case by his seat. It lifted, and Heim stared down the barrel of a laser pistol.

"Sit back!" Bragdon ordered. "I'll shoot the first one who unstraps himself."

IV

When he cycled through the airlock, out of the flyer's interior gee-field, Staurn yanked at Heim so violently that he staggered. He tightened his leg muscles and drew himself erect. However well balanced, the load of gear on him was monstrous.

Jocelyn had gone ahead, to cover the prisoners as they emerged. She looked grotesquely different in her airsuit, and the dark faceplate was a mask over her features. He moved toward her.

"Stop!" In spite of the helmet pickups being adjusted to compensate for changed sound-transmission parameters, her voice was eerily different. He halted under the menace of her gun. It was a .45 automatic, throwing softnosed slugs at low velocity to rip open a man's protection.

He drew a long breath, and another. His own air was a calculated percentage composition at three atmospheres, both to balance outside pressure and to furnish extra oxygen for the straining cells. It made his words roar in

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the helmet: "Joss, what is this farce?"

"You'll never know how sorry I am," she said unevenly. "If you'd listened to me, back on the ship—"

"Your whole idea, then, was to wreck my plan," he flung at her.

"Yes. It had to be done. Can't you see, it had to! There's no chance of negotiating with Alerion when . . . when you're waging war. Their delegates told Earth so officially, before they left."

"And you believed them? Don't you know any more history than that?"

She didn't seem to hear. Words cataracted from her; through all the distortion, he could read how she appealed to him.

"Peace Control Intelligence guessed you'd come here for your weapons. They couldn't send an armed ship. The Staurni wouldn't have allowed. In fact, France could block any official action. But unofficially—We threw this expedition together and took off after you. I learned about it because PCI found out I was an, an, an old friend of yours and interrogated me. I asked to come along. I thought, I hoped I could persuade you."

"By any means convenient," he bit off. "There's a name for that."

"I failed," she said desolately. "Vic decided this trip was his chance to act. We don't mean to hurt you. We'll take you back to Earth. Nothing more. You won't even be charged with anything."

"I could charge kidnapping," he said.

"If you want to," she mumbled.

Hopelessness gutted him. "What's the use? You'd get yourself a judge who'd put you on probation."

Vadasz appeared, then Koumanoudes, then Uthg-a-K'thaq. The Greek cursed in a steady stream.

Without a captain, without a chief engineer, Fox *will have to go home, beaten before one blow was struck,* Heim thought.

He looked around. They had landed on the west bank of the Morh. It ran wide and luminous through a sandy, boulder-strewn dale walled by low bluffs. The mountains of Kimreth reared opposite the sun, still many kilometers distant, not quite real in the blue-gray haze of intervening air, but a titan's rampart, dominated by the volcanic cone he had seen from afar. Underfoot the ground was covered by that springy moss-like red-yellow growth which was this world's equivalent of grass. Overhead the sky arched plum-dark, clouds scudding on a wind that boomed in his audio receptors. A flock of airborne devilfish shapes drifted into sight and out again.

How far have we come? What's going to happen?

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Vadasz moved to Heim's side, touched helmets, and muttered, "Can we rush her? I do not think her aim will be good here."

"Nor can we move fast," Heim said. *Though . . . would you really shoot me, Joss?*

His heart shuttered and sweat smelt sharp in his nostrils. But before he could nerve himself to try, Bragdon was out, and there was no question whether that laser pistol would be used.

"*G'yaaru!*" Uthg-a-K'thaq shouted. "You hawe lewt the airlock owen!"

"I know," Bragdon said. "And I've set the pilot a certain way. Better lie down." He eased himself to a sitting position.

The flyer whined and leaped forward. The glare off its metal blinded Heim. He saw what seemed a comet arc off the ground, to a hundred meters, loop about, and plunge. Instinct sent him flat on his belly.

Some distance away, the flyer crashed. The explosive mixture of hydrogen and oxygen went off. Blue flame spurted upward. Thunder coughed, again and again, and Heim heard shards scream above him. Then there was only a thick pillar of smoke and dust, while echoes tolled away and were lost in the wind.

He strained back to his feet. His head still rang. The other males did likewise. Jocelyn remained seated.

"Great . . . jumping . . . Judas," Koumanoudes gasped. "What have you done?"

"Don't be alarmed," said Bragdon. "We have other transportation coming." He paused. "I may as well explain. The object is to cripple your damned piracy by taking you here back to Earth. I had various schemes in mind, but this chance suggested a simple method.

"They engineered this, huh?" Koumanoudes snorted. "Yeh. They've got members in government too."

Heim spoke to Jocelyn. "You never actually quit that gang, did you?"

"Please, please," her whisper drifted down the wind.

"We may as well make ourselves comfortable," Bragdon advised. "This gravity will wear us out if we don't. The other vessel probably won't arrive for several hours, since we couldn't make exact timing or location arrangements, nor risk radio." He gestured with his gun. "You sit before I do."

Vadasz was so near Heim that the captain alone heard the minstrel's indrawn hiss and noticed how he stiffened. "Heigh-ho, Roger!" he murmured. "Hook the first moon by."

"What's that?" Bragdon challenged, for he saw his prisoners go taut.

"I would not translate in a

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lady's presence," Vadasz snarled.

It thrilled through Heim. *Spaceman's slang. "Something's about to happen. Take your chance when you see it."* The blackness and coldness departed him. His pulse slammed with preparation to fight.

"Are you skizzy, though?" Vadasz continued. "We can't stay here."

"What d' you mean?" Bragdon demanded.

"Next to a river like this. Flash floods. We will get tumbled around, our suits torn open, we are dead unless we get on higher ground."

"You lie!"

"No, no. Look at those mountains. Think. A dense atmosphere under strong gravity has a high density gradient, therefore a high temperature gradient. This is autumn. It gets cold enough at night, above snowlines, to freeze ammonia. But the stuff liquefies again about noon, and pours down into the riverbeds. The gravity pulls it so fast that it goes fifty kilometers or better before it evaporates. Isn't that true, Gregorious? You were the one who told me."

"Sure," Koumanoudes said. "That's what the name Morh means. Floodwater."

"If this is some trick—" Bragdon began.

It sure as blaze is, Heim's thought leaped. *There's no such phenomenon. But the yarn sounds plausible to a newcomer —I hope—how I hope!*

"I swear I'll shoot on any suspicion," Bragdon said.

Heim started to walk away from him. "Do, if you want," he retorted. "That's an easier way to die than in an ammonia flood. You can't stop me trying to get on top of those bluffs."

His back was tense against the firebeam. But only Jocelyn's cry reached him: "Vic, no, don't! What's the harm?"

"I . . . guess none, except that it's a difficult climb," Bragdon conceded. "Okay. You people go first. Jocelyn will cover me while I follow. If you feel like running away, once you're over the crest, I don't mind too much. You can't get far before the flyer comes, and we'll catch you then. Or if you find some hiding place, Staurn will kill you for me."

Step by heavy step, Heim wound among the scattered rocks until he reached the nearest bank. It was bare gritty earth, mingled with stones, not high or steep but a daunting obstacle when this weight bore on him. He commenced trudging upward. The slope gave way under his boots, slid past in a hiss and a rattle, he lost his footing and went to hands and knees.

Fumbling erect, he proceeded cautiously. Before long he was half drowned in sweat, his heart raced

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and the air burned his throat. Through blurred eyes he saw Vadasz and Koumanoudes toiling behind. Uthg-a-K'thaq made it with less trouble, down on his stomach, pushing with wide feet and scrabbling with powerful swimmer's arms; but still the Naqsan's breath was noisy across the wind.

Somehow they got to the top. Heim and his engineer gave the others a hand. They crouched on the brink and wheezed.

There was a stone under Heim's glove. His fingers closed.

As strength returned, he saw Bragdon halfway up. The Peaceman was taking his time, frequent lengthy rests, during which he stood gun in hand and glared at the privateers. Jocelyn waited below. Now and then sand or pebbles skittered around her, dislodged by Bragdon, but she didn't try to dodge. Her suited form looked black in the lightning-blue sun-dazzle; her pistol reflected it moltenly.

Vadasz knelt between Heim and Koumanoudes. He squeezed their hands. No other signal or explanation was needed.

Heim threw his stone. An instant later, their own missiles whizzed from his men. Accelerated at nineteen hundred centimeters per second per second, the rocks flew as if catapulted.

He didn't know whose hit Bragdon. He saw the man lurch and fall. Then he and his folk were on their way down again.

Leap — slide — run — skip — keep your feet in the little avalanche you make—charge in your weight like a knight at full gallop!

Jocelyn had not been struck. He saw her stumble back, slow and awkward, and bounded past the collision of Bragdon and Koumanoudes. Dust boiled from his bootsoles. Twice he nearly fell. It could have snapped his neck at the speed he now had. Somehow he recovered balance and raged on.

Down to the valley floor! He must tumble or run, faster than man had ever run before. His body was a machine gone wild, he fought to steer it and slow it but the momentum was overwhelming. Each footfall slammed through muscle and bone to rattle his teeth. The blood brawled in his ears.

Jocelyn had shot once while he plunged. The slug whanged wide. He saw the gun slew around to take closer aim. No chance for fear or hope. He had nothing but velocity. Yet it was too great for common sense to perceive. In her panic and her anguish she hesitated before shooting anew. The time was a fractional second. A man attacking her on Earth would have taken the bullet point blank. Heim crashed by before she could squeeze trigger. His fist shot out. He did not snatch the gun. His blow tore it from her grasp and spun it meters away.

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On flat terrain he braked himself: to a normal run, a jog, a halt. He wheeled. Jocelyn had been knocked down by his mere brush against her. She was still struggling to regain her feet. Through his own deep gasps, he heard her weep. He plodded to retrieve the pistol.

When he had it, he looked for the others. Uthg-a-K'thaq slumped on his feet in the rubble under the bluff. Two men stood half crouched nearby. One held the laser. A third sprawled unmoving between them, suit rent and blackened.

Heim steadied one shaking hand with the other and took aim. "Endre!" he called, hoarse and in horror.

"We have him," rang back the voice of the armed man. It sank till the wind nearly overrode it. "But Gregorios is done."

Slowly, Heim dragged his way thither. He could not see through the Greek's sooted faceplate. In a dull fashion he was glad of that. The laser beam had slashed open fabric and body, after which gases mixed and exploded. Blood was streaked round about, garish scarlet.

A gruesome keening lifted from the Naqsan. *"Gwurru shka ektrush,* is this war? We do not thus at home. *Rhata, rahata."*

"Bragdon must have recovered himself and shot as Gregorious jumped him," Vadasz said dreadily. "The impact jarred his gun loose. I got it and came back here, where they both had rolled. C.E. held him pinned meanwhile."

Heim stared long at the Peaceman. Finally, mechanically, he asked, "Any serious injuries?"

"No," Bragdon replied in the same monotone. "At least, no bones broken. I've a headache." He stumbled off, lowered himself to the ground, and lay there with an arm across his faceplate.

"I thought we could get away with this," Vadasz said, eyes fixed on the dead man.

"We did," Heim answered. "Wars have casualties." He clapped the minstrel's shoulder and walked toward Jocelyn. Sweat, runneling down his body, squelched in his boots. He felt a tightness in chest and gullet as if he were about to cry, but he wasn't able.

"You all right, Joss?" he asked.

She backed away. "I won't hurt you," he said.

"But I shot at you!" Her voice was as a frightened child's.

"That's in the game." He laid his arms around her and drew the helmet against his breast. She sobbed for minutes. He waited it out from a vague sense of duty. Not that he hated her; there was a strange ashy vacuum where she had been in him. His emotions were engaged with the man who had died, his thoughts with what must be done.

At last he could leave her, seated

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and silent. He went on to the wrecked flyer. Fragments and cargo were scattered from hell to breakfast. He found an unharmed entrenching tool and several machetes and carried them back.

"Start digging, Bragdon," he said.

"What?" The man jerked where he lay.

"We're not going to leave Greg Koumanoudes unburied. It'll have to be a shallow grave, but—Get busy. Somebody will spell you when you're tired."

Bragdon rose, centimeter by centimeter. "What have you done?" he cried. "I didn't kill that man. You did, with your insane attempt to—to what? Do you think you can stand off our flyer?"

"No," Heim said. "I don't plan to be here when it arrives."

"But—but—but—"

"You left your motor running." Heim gave him the tool and continued on to Vadasz. Uthg-a-K'thaq bestirred himself and came to help, scooping dirt with his hands.

"Did you think of anything beyond getting control?" Heim asked the Magyar.

"No," said Vadasz. "A vague idea of—I knew not what, except that my forefathers never quit without a fight."

"Sit down and let's look at the poopsheets." Every suit had a pocket loaded with charts and other local information. There wasn't much about Staurn. Heim unfolded the map of this region. It fluttered and crackled in the wind. He spread it across his knees. "Greg would have known what these symbols mean. But look—" His finger traced the outlines. "Those mountains are the Kimreth boundary and this is the River Morh; we know that. Now, see, Mount Lochan is marked as the highest in the northern sierra. In fact, no other peak stands that much bigger than its neighbors. So yonder old volcano has to be Lochan. Then we're about *here.*"

"Yes." A certain life returned to Vadasz's speech. "And here is the Hurst of Wenilwain on Lochan's northern slope. About a hundred airline kilometers hence, would you not say? I doubt we can survive that big a walk. But if we can get moderately near, someone flying on patrol or on a hunt ought to spy us."

"And Wenilwain knows us. Uh-huh." Heim shook his head. "It's a long chance to take, I admit. What are these areas marked between us and him? The Walking Forest; the Slaughter Machines; Thundersmoke."

"Let me try—" Vadasz riffled through the pitifully thin handbook. "No entry. But then, this is a stat of a map annotated by Gregorios and Charles, on the basis of what they learned while dealing with the natives. They must have

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planned to pass the information on when they got home. It's a common practice."

"I know. And Greg's dead. Well, we'll find out."

"What of those?" Vadasz pointed at Bragdon painfully digging, Jocelyn huddled by herself.

"They'll have to come along, I'm afraid. For one thing, it'll puzzle and delay their friends, not to find anybody here, and so give us time to find cover. For another thing, we'll need every hand we can get, especially when we hit the foothills."

"Wait!" Vadasz slapped the ground. His voice bleakened. "Gunnar, we cannot do it. We have air recyclers, but nothing for water except a day's worth in these canteens. That isn't even allowing for what we will need to reconstitute powdered food. And you know that ten kilometers a day, afoot, will be fantastic progress."

Heim actually noticed himself smiling, lopsidedly. "Haven't you ever met that trick? We won't be far from native water at any time; notice these streams on the map. So we fill our canteens, put the laser pistol at wide beam and low intensity, and boil out the ammonia."

"Spending the capacitor charges," Vadasz objected. "That leaves only your slugthrower for defense."

"Shucks, Endre, local tigers are no problem. We're as unsavory to them as they'd be to us. Our biggest enemy is the gravity drag; our second biggest the short food and medicine supply; our third, maybe, bad weather if we hit any."

"M-m-m . . . as you say. I would still like to know precisely what the Slaughter Machines are. But—yes, of course, we will try." The minstrel got up almost bouncily. "In fact, you have made me feel so much better that I think I can take my turn at digging."

They had not much time to spare, enough barely to scrape a little earth over the fallen man and hear Vadasz sing the Paternoster. Then they departed.

V

Four Staurnian days? Five? Heim wasn't sure. The nightmare had gone on too long.

At first they made good time. The ground rolled quite gently upward, decked with sparse forest that hid them from aerial searchers without hindering their feet. They were all in trim physical shape. And their survival gear, awkward though it seemed, was a miracle of lightness and compactness.

Yet between it and the gravity, each was carrying a burden equal to more than his own Earth weight. "Good time" meant an average of hardly over one kilometer per hour.

Then the land canted and they were on the slopes of Kimreth's foothills. Worse, their bodies were

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beginning to show cumulative effects of stress. This was nothing so simple as exhaustion. Without a sealtent, they could never take off their airsuits. The recyclers handled volatile byproducts of metabolism; but slowly, slowly, the fractional percent that escaped chemical treatment built up. Stench and itch were endurable, somewhat, for a while. Too much aldehyde, ketone, organic acid, would not be.

And high gravity has a more subtle, more deadly effect than overworking the heart. It throws the delicate body fluid balance—evolved through a billion years on *one* smaller planet—out of kilter. Plasma seeps through cell walls. Blood pools in the extremities, ankles swell while the brain starves. On Staurn this does not happen fast. But it happens.

Without the drugs in their medikits, gravanol, kinesthan, assorted stimulants and analgesics, the travelers would not have traveled three days. When the drugs gave out (and they were getting low) there would be perhaps one day in which to go on, before a man lay down to die.

Is it worth it? gibbered through the guerning in Heim's skull. *Why didn't we go back home? I can't remember now.* His thought fluttered away again. Every remnant of attention must go to the Sisyphus task of picking up one foot, advancing it, putting it down, picking up the other foot, advancing it. . . . Meanwhile a deathheavy weight dragged at his right side. *Oh, yes, Jocelyn,* he recalled from a remote past. *The rest of us have to take turns helping her along.*

She stumbled. Both of them came near falling. "Gotta rest," her air-warped voice wavered.

"You rested . . . till ten minutes ago. . . . Come!" He jerked brutally on the improvised harness which joined them.

They reeled on for another five hundred seconds. "Time," Vadasz called at the end. They lowered themselves down on their backs and breathed.

Eventually Heim rose to his knees. His vision had cleared and his head throbbed a bit less. He could even know, in a detached way, that the scenery was magnificent.

Eastward the hills up which he was laboring swooped in long curves and dales toward the illimitable hazy plain. The gentled light of an evening sun turned their colors—tawny and orange, with red splashes to mark stands of forest—into a smoldering richness. Not far away a brook twisted bright among boulders, until it foamed over in a series of cataracts whose noise was like bells through the still air. A swarm of insectoidal creatures, emerald bodies and rainbow wings, hovered above the pools it made.

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Westward the mountains loomed dark and wild against the sun, which was near their ridge. Yet it tinged Lochan's snowcone, a shape as pure as Fuji's, with unearthly greens and blues under a violet heaven. The crags threw their shadows far down the sides, dusking whatever was ahead on Heim's route. But he saw that, a kilometer hence, a wood grew. His field glasses showed it apparently thick with underbrush. But it was too far to go around—he couldn't see the northern or southern end—while it was probably not very wide.

Vadasz had also been looking in that direction. "I think best we call this a day," he said.

"It's early yet," Heim objected.

"But the sun will soon go below that high horizon. And we are exhausted, and tomorrow we shall have to cut our way through yonder stuff. A good rest is a good investment for us, Gunnar."

Hell, we've been sleeping nine hours out of the eighteen! Heim glanced at the others. Their suits had become as familiar to him as the seldom seen faces. Jocelyn was already unconscious. Uthg-a-K'thaq seemed to flow bonelessly across the place where he lay. Vadasz and Bragdon sat tailor style, but their backs were bent. And every nerve in Heim carried waves of weariness.

"All right," he said.

He hadn't much appetite, but forced himself to mix a little powder with water and squeeze the mess through his chowlock. When that was done, he stretched himself as well as his backpack allowed. Some time had passed before he realized that he wasn't sleepy. Exhausted, yes; aching and throbbing; but not sleepy. He didn't know whether to blame overtiredness or the itch in undepilated face and unwashed skin. *Lord, Lord, what I'd give for a bath, clean sheets to lie between, clean air to breathe!* He braked that thought. There was danger enough without adding an extra psychological hazard.

Pushing himself to a seated position, he watched the light die on Mount Lochan. The sky darkened toward night, a few stars trembled, the little crescent of the outer moon stood steely near the zenith.

"You too?"

Heim shifted so he could see through his faceplate who had joined him. Bragdon. Reflexively, his hand dropped to his pistol.

Bragdon laughed without humor. "Relax. You've committed us too thoroughly." After a moment: "Damn you."

"Who made this mess in the first place?" Heim growled.

"You did, back in the Solar System. . . . I've heard that Jews believe death itself to be an act of expiation. Maybe when we die here on Staurn, you'll make some amends for him we had to bury."

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"I didn't shoot him," Heim said between his teeth.

"You brought about the situation."

"Dog your hatch before I take a poke at you."

"Oh, I don't hold myself guiltless. I should have managed things better. The whole human race is blood guilty."

"I've heard that notion before, and I don't go along with it. The human race is nothing but a species. Individuals are responsible for what they personally do."

"Like setting out to fight private wars? I tell you, Heim, that man would be alive today if you'd stayed home."

Heim squinted through the murk. He could not see Bragdon's face, nor interpret nuances in the transformed voice. But—"Look here," he said, "I could accuse you of murder in the course of making your own little foreign policy. My expedition is legal. It may even be somewhat more popular than otherwise. I'm sorry about Greg. He was my friend. More, he was under my command. But he knew the risks and accepted them freely. There are worse ways to die than in battle for something that matters. You do protest too much."

Bragdon started backward. "Don't say any more!"

Heim hammered pitilessly: "Why aren't you asleep? Could it be that Greg came back in your dreams? Have you been thinking that your noisy breed may be powered less by love than by hate? Would you like to chop off the finger that pulled trigger on a man who was trying to do his best for Earth? Can you afford to call anyone a murderer?"

"Go to hell!" Bragdon screamed. "Go to hell! Go to hell!" He crawled off on all fours. Some meters distant, he collapsed and shuddered.

Maybe I was too rough on him, Heim thought. *He's sincere. . . . Fout on that. Sincerity is the most overrated virtue in the catalogue.* He eased himself back to the turf. Presently he slept.

Sunrise woke him, level across the Uneasy Lands and tinging Mount Lochan with fire. He felt more stiff and hollow-headed each dawn, but it helped to move about, fix a cold breakfast and boil a fresh supply of water. Bragdon was totally silent; no one else said many words. But as they started the long slog toward the forest—a whole kilometer uphill—Vadasz began to sing.

"Trois jeunes tambours, s'en revenaient de guerre.
Trois jeunes tambours, s'en revenaient de guerre,
Et ri, et ran, ra-pa-ta-plan,
S'en revenaient de guerre.—".

When he had finished, he went on to *Rimini, Marching Through Georgia, The British Grenadiers,* and *From Syrtis to Cydonia.* Heim and Jocelyn panted with him in the choruses, and perhaps Uthg-a-

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K'thaq, or even Bragdon, got some help too from the tramping rhythms and the brave images of home. They reached the woods sooner, in better shape, than expected.

"Thanks, Endre," Heim said.

"My job, you know," Vadasz answered.

Resting before they went among the trees, Heim studied the growth more closely. At a distance, by dawnlight, he had seen that it wound across the hills along a fault line, and was as sharply bordered as if artificial. Since the northwestern edge was well above him on a steep rise, he had also made out a curious, churned sweep of soil on that side, which passed around the slopes beyond his purview. Now he was too near to see anything but the barrier itself.

"Not brushy after all," he observed in surprise. "Only one kind of plant. What do you think?"

"We are none xenowotanists," the engineer grunted.

The trees were about four meters tall; nothing grows high on Staurn. And they were no thicker than a man's arm. But numberless flexible branches grew along the stems, from top to bottom, each in turn split into many shoots. In places the entanglement of limbs was so dense as to be nearly solid. Only the upper twigs bore leaves; but those were matted together into a red roof beneath which the inner forest looked night-black.

"This'll be machete work," Heim said. "We shouldn't have to move a lot slower than usual, though. One man cuts—that doesn't look too hard—while the others rest. I'll begin." He unlimbered his blade.

Whick! Whick! The wood was soft, the branches fell right and left as fast as he could wield his tool. In an hour the males ran through a cycle of turns, Jocelyn being excused, and were far into the forest. *With the sun still only a couple of hours up,* Heim exulted.

"Take over, Gunnar," Vadasz rattled. "The sweat is gurgling around my mouth."

Heim rose and advanced along the narrow trail. It was hot and still in here. A thick purple twolight soaked through the leaves, making vision difficult where one stood and impossible a few meters off. Withes rustled against him, springily resisting his passage. He felt a vibration go back through the machete and his wrist, into his body, as he chopped.

Huh! Odd. Like the whole interlocked wilderness shivering.

The trees stirred and soughed. Yet there was no breath of wind.

Jocelyn shrieked.

Heim spun on his heel. A branch was coiling down past her, along her airsuit. Something struck his back. He lifted his machete—tried to—a dozen tendrils clutched him by the arm. He tore free.

An earthquake rumble went through the gloom. Heim lost bal-

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ance under a thrust. He fell to one knee. Pain shot through the point of impact. The tree before his eyes swayed down. Its many-fingered lower branches touched the soil and burrowed. Leaves drew clear of each other with a crackling like fire. He glimpsed sky, then he was blinded by their descent about his head.

He shouted and slashed. A small space opened around him. The tree was pulling loose its roots. Groaning, shuddering, limbs clawed into the earth, it writhed forward.

The entire forest was on the march. The pace wasn't quick, no faster than a man could walk on Staurn, but it was resistless. Heim scrambled up and was instantly thrown against a tangle of whipping branches. Through airsuit and helmet he felt those buffets. He reeled away. A trunk, hitching itself along, smote him in the stomach. He retched and dropped his machete. Almost at once it began to be covered, as limbs pulled from the ground and descended for the next grab along their way. Heim threw what remained of his strength against them. They resisted with demoniac tenacity. He never knew how he managed to part them long enough to retrieve the blade.

Above the crashing and enormous rusle he heard Jocelyn scream again, not in startlement but in mortal terror. He knelt to get under the leaves and peered wildly about. Through swaying, lurching trunks, snakedancing branches, clawing twigs, murk and incandescent sunlight spears—he saw her. She had fallen. Two trees had her pinned. They could break bones or rip her suit when they crawled across her body.

His blade flew in his hand. A battlecry burst from his mouth. He beat his way to her like a warrior hewing through enemy lines. The stems had grown rigid, as if they had muscles now tightened. His blows rebounded. A sticky fluid spurted from the wounds he made. "Gunnar, help!" she cried in sightlessness. He cleared brush from her until he could stoop and pull her free.

"You okay?" He must shout to be heard in the racket. She lay against him and sobbed. Another tree bent down upon them. He yanked her to her feet.

"To me!" he bellowed. "Here!"

Uthg-a-K'thaq wriggled to join him. The Naqsan's great form parted a way for Bragdon. Vadasz wove lithely through the chaos.

"Joss in the middle," Heim ordered. "The rest of us, back to back around her. We can't outrun this mess, can't stay here either. We'd exhaust ourselves just keeping our feet. Forward!"

His blade caught a sunbeam and burned in its arc.

The rest was chop, wrestle, duck and dodge, through the moving

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horror. Heim's awareness had gone coldly lucid; he watched what happened, saw a pattern, found a technique. But the strength to keep on, directly across that tide, came from a deeper source. It was more than the simple fear of death. Something in him revolted against his bones being tumbled forever among these marching trolls.

Bragdon gave way first. "I can't . . . lift . . . this . . . any more," he groaned, and sank to the earth. Wooden fingers closed about one leg.

Uthg-a-K'thaq released him. "Get in the middle, then," the Naqsan said. "Hel' him, you Lawrie."

Later in eternity, Vadasz's machete sank. "I am sorry." The minstrel could barely be heard.

"No!" Heim said. "We'll all get out, or none."

"Let me try," Jocelyn said. She gave Vadasz into the care of Bragdon, who had recovered a little, and took his knife herself. Her blows were weak, but they found she could use the tool as a crowbar to lever a path for herself.

And . . . sunlight, open sky, turf under Lochan's holy peak. They went a few meters further before they toppled.

Heim woke a couple of hours afterward. For a while he blinked at heaven and found curious shapes in the clouds, as if again he were a boy on Gea. When memory came back, he sat upright with a choked oath.

The trees were still moving past. He thought, though, they had slowed down. Northwestward, opposite to their direction, he saw their trail of crumbled earth. The most distant part that he could spy was overlaid with pale yellow, the first new growth.

Uthg-a-K'thaq was the only other one awake. The Nasqsan flopped down beside him. "Well, skiwwer, now we know what the Walking Worest is."

"I'd like to know how it works," Heim said.

Rest had temporarily cleared his mind. An answer grew. "I'm only guessing, of course," he said after a minute, "but it could be something like this. The ultraviolet sunlight makes plant chemistry hellish energetic. That particular species there needs something, some mineral maybe. Where faulting exposes a vein of it, a woods appears."

"Not likely mineral," Uthg-a-K'thaq corrected. "You cannot hawe liwe dewendent on sheer geological ac-cident."

"Geology operates faster on a big planet than a terrestrial one, C.E.," Heim argued. "Still, I'll agree it makes poor ecology. Let me think. . . . Okay, let's say you get bacteria laying down organic stuff of a particular kind, whatever conditions are right. Such deposits would be fairly common, exposed fairly often. Those trees could broadcast spores that can lie

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dormant for centuries, waiting for a chance to sprout. All right, then, they consume the deposit at a tremendous rate. Once mature, such a forest has to keep moving because the soil gets exhausted where it stands. Reproduction is too slow; the trees themselves have to move. Evidently sunlight starts them on their way, because you remember they didn't begin till mid-morning and now in the afternoon they're coming to a halt."

"What hawwens when they hawe eaten out the whole wein?"

"They did. Their remains go back to the soil. Eventually everything gets reprocessed into the material they need, and the spores they've left wake to life." Heim grimaced. "Why am I trying to play scientist? Defense mechanism? I've *got* to believe that thing is natural."

"We came through it aliwe," Uthg-a-K'thaq said calmly. "Is this not suwwicient?"

Heim didn't reply. His gaze drifted west, whither he had yet to go. Did he see a vague plume of mist on the lower steeps of Lochan? It was too distant for him to be sure. But—Thundersmoke? *Whatever that is. No need to worry about it now. First we've got to get past the Slaughter Machines.*

VI

Two more days—twenty kilometers? They could not have done that much were they not crossing a flat space, a plateau on the lap of Lochan.

It was dreary country, treeless, rock-strewn, sparsely covered with low yellowish scrub. Many streams ran down toward the Morh, their tinkle the only sound except for an endless whittering wind; but the banks held no more life than the dusty stretches beyond. Along the ranges that hemmed in the world on three sides, and the splendid upward leap of the snowcone ahead, redeemed this landscape.

The first evening they camped in sight of a crater. Its vitrified walls gleamed reddish black, like clotted blood, in the last sunlight. Vadasz pointed and remarked, "I thought this region is barren because runoff from above leached the soil. Now I find otherwise."

"How so?" Heim asked, incurious in his fatigue.

"Why, yonder is plain to see as bombwork. There must have been an industrial center here once, that was destroyed in the war."

"And you'd let the same happen to Earth!" Bragdon's accusation was the first word he had spoken in more than a day.

Heim sighed. "How often must I explain?" he said, more to Jocelyn than the Peaceman. "Earth has space defenses. She can't be attacked—unless we drift on from crisis to crisis till matters get so bad that both sides have to build fleets big enough to take the losses

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in breaking through. All I want is to head off that day by settling with Alerion now. Unfortuntely, Alerion isn't interested in a reasonable settlement. We've got to prove to them that they haven't any alternative."

"Womwardment does not account wor the inwertility here," said Uthg-a-K'thaq. "The war was three or four Earth centuries ago. Radioactiwity disawweared long since. Something else has kewt nature 'rom recowering."

"Oh, to hell with it," Jocelyn moaned. "Let me sleep."

Heim lay down too. He thought with a dull unease that they should set a watch—but no, everyone was exhausted. . . . Unconsciousness took him.

The next day they saw two metallic shapes at a distance. There was no question of detouring for a closer look, and in any event they had something else to occupy what small part of their minds could be spared from the ever more painful onward march. The end of the plateau was coming into sight. Between the edge and the mountain's next upward slope was an escarpment. Right and left stretched those obsidian cliffs, sheer, polished, not high but unscalable in this gravity without equipment the party didn't have. To go around them—at whatever unseen point they stopped—would take days; and the survival drugs could not last for such a journey.

Only in the center of view was the line broken. A bank of vapor roiled from the foot of the scarp for several kilometers up the mountainside above. Like an immense curtain it hid the terrain; plumes blew off the top, blizzard color against the deep sky, and a roaring grew louder as the walkers neared.

"That has to be Thundersmoke," Vadasz said. "But what is it?"

the iron, which in turn was eroded English," Uthg-a-K'thaq answered. "*Tsheyyaka*. The ground weneath is hot, and water woils out."

"Geysers and hot springs," Heim said. He whistled. "But I've never seen or heard of anything their size. They make Yellowstone or Dwarf's Forge look like a teakettle. Can we get through?"

"We must." Uthg-a-K'thaq bent his head so that all three eyes could peer through his faceplate. Evolved for the mists of his own planet, they could see a ways into the infrared. "Yes-s-s. The cliwws are crum'led. Makes an incline, though wery rugged and with water rushing ewerywhere."

"Still, thank God, a high gravity means a low angle of repose. And once into those meadows beyond, we should have a chance of meeting hunters or patrollers from the Hurst." Heim straightened a little. "We'll pull through."

A while later he saw a third gleam of steel among the bushes. This one was so near the line of

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march that he altered course to pass by. They didn't know exactly where they could best start into Thundersmoke anyway.

The object grew as he plodded. During rest periods he found he could not keep his gaze off. The shape was no uglier than much else he had seen, but in some indescribable fashion it made his spine crawl. When at last he dragged himself alongside and stopped for a look, he wanted to get away again, fast.

"An ancient machine." Vadasz spoke almost too softly to be heard through the grumble and hiss from ahead. "Abandoned when the bomb struck."

Corrosion was slow in this atmosphere. Paint had worn off the iron, which in turn was eroded but still shiny in places. The form was boxlike, some two meters square and five long, slanting on top toward a central turret. The ruins of a solar power accumulator system could be identified, together with a radar sweep and, Heim thought, other detector instruments. Several ports in body and turret were shut, with no obvious means of opening them. He parted the brush around the base and saw that this had been a hovercraft, riding an air cushion and propelled by net backward thrust in any direction.

"A vehicle," he said. "After the war it just sat, I guess. Nobody can have moved back to the Lochan region for a long time. Those other things we glimpsed must be similar."

Jocelyn clutched at his hand. He was reminded of his daughter when she was small and got frightened. "Let's go, Gunnar," she begged. "This is too much like dead bones."

"I wonder," he remarked, carefully matter-of-fact, "why the metal wasn't salvaged. Even with atomic energy, I should think the natives on a fireless plant would value scrap iron."

"Taboo?" Vadasz suggested. "These wrecks may well have dreadful associations."

"Maybe. Though my impression is that the Staurni look back on their war with a lot less horror than we remember our Exchange—and Earth got off very lightly." Heim shifted the burden of air system and supply pack on his shoulders. "Okay, we'll push on. The sun's low, and I don't fancy camping among ghosts."

"Can you give us a song, Endre?" Jocelyn asked. "I could use one."

"I shall try." The minstrel's voice was flattened as well as distorted in transmission, but he croaked:

"While goin' the road to sweet Athy, harroo, harroo!—"

Engaged in helping the woman along, Heim paid no attention to the words at first. Suddenly he realized that Vadasz was not singing

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When Johnny Comes Marching Home at all, but the cruel old Irish original.

"—Where are the legs on which ye run
When first ye went to carry a gun?
Indeed your dancing days are done.
Och, Johnny, I hardly knew ye.

"With their guns and drums and drums and guns the enemy nearly slew ye.
Och, Johnny, me dear, ye look so queer, Johnny, I hardly knew ye!"

Heim glanced at Bragdon. One could almost read the thought in that helmet: How can these devils admit to themselves what war really means? The gloved hands clamped into fists: I know! I had to bury it.

"—Ye haven't an arm and ye haven't a leg,
Ye're an eyeless, noseless, chickenless egg.
Ye'll have to be put in a bowl to beg.
Och, Johnny, I hardly knew ye.

"With their guns and drums and drums and guns—"

It was not good to hear in this slain land. But maybe Endre had no chance. Whatever haunted the machine receding too slowly into distance, had touched him likewise.

Everyone was unspokenly glad of the exhaustion which tumbled them into sleep that night. Yet Heim rested ill. Dreams troubled him, and several times he started awake . . . what noise? A change in the geysers? No, something metallic, a creak, a rattle, a buzz, far off but limping closer; imagination, nothing else. He sank back into the feverish dark.

Dawn was wet with mists blown from Thundersmoke, a bare three or four kilometers away. White vapors coiled along the ground and hazed the countryside so that vision faded shortly into grayness. Overhead the sky was a bowl of amethyst and Lochan's cap too bright to look at. Heim closed his chowlock on a mouthful of concentrate—the rest was a lump in his stomach—and stared blearily around. "Where's Joss?"

"She went yonder," Vadasz said. "Um-m . . . she ought to be back now, eh?"

"I'll go find her." Heim settled the weight on his body and lumbered into the fog.

She hunched not far off. "What's the matter?" he called through the gush and burble of water.

Her form scarcely moved. "I can't," she said thinly.

"What can't you?"

"Go any further. I can't. Pain, every joint, every cell. You go on. Get help. I'll wait."

He crouched, balancing on hands as well as feet. "You've got

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to march," he said. "We can't leave you alone."

"What can hurt me worse? What does it matter?"

Remorse smote him. He laid an arm across her and said without steadiness, "Joss, I was wrong to make you come. I should have left you behind for your friends—But too late now. I don't ask you to forgive me—"

"No need, Gunnar," She leaned against him.

"—but I do tell you you've got to make the trek. Three or four more days." *Can't be any longer, because that's when we run out of supplies.* "Then you can rest as much as you want."

"Rest forever," she breathed. Moisture ran down her faceplate like tears, but she spoke almost caressingly. "I used to dread dying. Now it's sweet."

Alarm cut through his own weariness. "There's another reason you can't stay here by yourself. You'd let go all holds. This is the wrong time of month for you, huh? Okay." He took the waste unit she had not refolded and slung it on his own back. His gloves groped at her pack.

"Gunnar!" She started. "You can't carry my load too!"

"Not your air rig, worse luck. The rest is only a few kilos." The fresh weight gnawed at him. He climbed to his feet again and reached down for her hands. "C'mon. Allez oop."

The breeze shifted and from the north came the sound of his dreams. Clank, bang, groan, close enough to override the thunders. "What's that?" she shrilled.

"I dunno. Let's not find out." His own heart missed a beat, but he was grimly pleased to see how she scrambled erect and walked.

At camp, Vadasz and Uthg-a-K'thaq stared vainly for the source of the new noise. Bragdon was already stumping off, lost in an apathy which must stem from more than tiredness. The others followed him without speculating aloud.

The sun swung higher and began to burn off the fog. Steam still shrouded the natural cut in the cliffs, though the Naqsan said he could make out details of the nearer part. The humans saw scores of boulders, some big as houses, and thousands of lesser rocks that littered the final kilometer before the climb began. Among them washed hot, smoking streams, which turned the ground into mud tinted yellow by sulfur. Where pools had formed the hues were red and green, microscopic organisms perhaps. . . .

The pursuing clatter had strengthened. Vadasz tried to sing, but no one listened and he soon quit. They tottered on, breathing hard, pausing less often to rest than had been their wont.

The moment came without announcement. Heim cast a glance behind and stopped dead. *"Fanden*

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i helvede!" he choked. His companions slewed around to see.

Between the lifting of fog and its own nearness, the thing had become visible a kilometer or so to their rear. It was another machine like the one they had found. But a twisted, weather-eaten detector frame sill rose above the turret, and the body moved . . . slowly, crippedly, loose parts vibrating aloud, airblower spitting and jerking, the whole frame ashudder, it moved in their wake.

Jocelyn suppressed a cry. Bragdon actually leaped backward a step. Panic edged his tone: "What's that?"

Heim beat down his own quick fear. "An abandoned vehicle," he said. "Some kind of automaton. Not quite worn out. Scarcely any moving parts, you know."

"But it's following us!" Jocelyn quavered.

"Probably set to patrol an area, home on any life it detects, and—" A crazy hope fluttered through Heim's brain, unshared by his guts. "Maybe we're being offered a ride."

"Suq?" asked Uth-a-K'thaq in astonishment. After a moment, thoughtfully: "Yes-s-s, is wossible. Or at least, grant a radio that wunctions, we could call."

"No." Vadasz's helmet rolled with headshaking. "I do not trust the looks."

Heim ran a tongue which had gone wooden over his lips. "It's moving quicker than we can, I think," he said. "We'll have to settle with it one way or another." Decision came. "Wait here. I'll go back and see."

Vadasz and Jocelyn caught his arms simultaneously. He shook them off. "Damnation, I'm still the captain," he rapped. "Let me be. That's an order."

He started off. The hurt in his muscles dwindled. Instead there came an odd, tingling numbness. His mind felt unnaturally clear, he saw each twig and leaf on the haggard bushes around, felt how his feet struck soil and the impact that traveled through shins to knees, smelled his own foulness, heard the geysers boom at his back. Earth seemed infinitely remote, a memory of another existence or a dream he had once had, unreal; yes, despite its vividness this world was unreal too, as hollow as himself. *I'm afraid,* he thought across an unbridgeable abyss. *That machine frightens me worse than anything ever did before.*

He walked on. There was nothing else to do. The detector lattice swiveled stiffly about, focused invisible unfelt energies on him. The robot changed direction to intercept. Several armor plates clashed loose. Blackness gaped behind them. The whole body was leprous with metal decay.

How long has it wandered this upland? For what?

The turret rotated. A port tried

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to open, got halfway, and stuck. The machine grated inside. Another port at the front of the body slid back. A muzzle poked forth. The slugthrower spoke.

Heim saw dirt fly where the bullets hit, a hundred meters short. He whipped about and ran. The thing growled. Swaying on an unstable air cushion, it chased him. The gun raved a minute longer before stopping.

The Slaughter Machines! beat through Heim's skull, in time with his gasps for wind and the jar of footfalls. *Robots to guard whatever there was where that crater is now. Guard it by killing anything that moved. But a missile got through, and the robots alone were left, and hunted and killed till they wore out, and a few are still prowling these barrens, and today one of them has found us.*

He reached the others, stumbled, and rolled in a heap. For a minute he lay half stunned. Vadasz and Uthg-a-K'thaq helped him rise. Jocelyn hung onto his hand and wept. "I thought you were dead. I thought you were dead."

"He would be," said Vadasz, "but explosives have deteriorated. . . . Watch out!"

Another port had opened, another tube thrust clear. Across the distance, through a red blur in his vision, Heim saw coils, a laser projector, and lasers don't age. He grabbed Jocelyn to pull her behind him. A beam sickled, brighter than the sun. It struck well to the left. Bushes became charcoal and smoke. The beam traced a madman's course, boiled a rivulet, shot skyward, winked out.

"The aiming mechanism," Uthg-a-K'thaq said. For once his own voice was shaken. "Has worn to uselessness."

"Not if the thing gets close," Bragdon whimpered. "Or it can slugger us, or crush us, or—Run!"

The terror had gone from Heim. He felt a cold uplifting: no pleasure of combat, for he knew how thin their chance was, but total aliveness. The matter grew crystalline in his mind, and he said: "Don't. You'll wear yourself out in no time. This is a walking race. If we can get to Thundersmoke, or even to those boulders, ahead of the bullets, we may be able to hide. No, don't shed your packs. We won't be allowed to retrieve them. Walk."

They struck out. "Shall I sing for you?" Vadasz asked.

"No need," Heim said.

"I thought not. Good. I do need the breath."

Heim took the rear. The engine coughed and banged behind. Again and again he could not control himself, he must stop and turn about for a look. Always death was closer. Old, old, crumbling, crazed, half blind and half palsied, the thing which had never been alive and would not die

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shivered along just a little faster than a man could stride on Staurn. The noise from it was an endless metal agony. Once he saw an armor plate drop off; once the air drive went awry and almost toppled the ponderous bulk; but it came on, came on. And the rocks of refuge ahead grew nearer with nightmare slowness.

Jocelyn began to stagger. Heim moved to give her support. As if the change in configuration had tripped some relay in a rotted computer, the slugthrower spat anew. Some of the bulletts buzzed past them.

Bragdon joined Heim on the woman's other side. "Let me help," he panted. She leaned on them both. "We . . . won't make it," Bragdon said.

"We might," Heim snapped, for he dreaded a return of that negation he had seen in Jocelyn this dawn.

"We could . . . maybe . . . if we moved steady. You could. Not me. Not her. Got to rest." Bragdon left the remainder unsaid: *The pursuer needs no rest.*

"Get into that water, among those rocks," Vadasz said. "Lie low. Then maybe that *pokolgep* cannot see us."

Heim followed his gesture. Somewhat to the left, a scatter of stones lay in a muddy pool. None were bigger than a man, but—A light artillery shell passed overhead. The cannon crack rang back off the unattainable cliffs. The shell struck, splintered a boulder, but did not explode.

"Let's try," he agreed.

They splashed through muck and crouched belly down in shallow red water. Heim was careful to hold his automatic free, Vadasz his laser. Pistols seemed pathetic against the monster's size and armament; but a man took care of his weapons. Mist blown from Thundersmoke pattered upon them. Heim wiped his faceplate and stared between two rocks.

The machine had halted. It snarled to itself, jerked guns right and left, swept detectors through a hemisphere. "Good Lord," Vadasz whispered, "I think indeed it has lost us."

"The water cools oww our in'rared radiation," Uthg-a-K'thaq replied as hushedly. "We are maywe under its radar weams, and maywe the owtical circuits are wad. Or the memory system has gone to wieces."

"If only—No." Heim's pistol sank in his fist.

"What did you think?" Jocelyn asked, frantic.

"How to disable what's left of the detector lattice. Could be done by a laser beam—see that exposed power cable? Only you'd never get close enough before you were spotted and killed."

The short pulse-stopping hope, that the machine might give up and go away, crashed. It started

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grinding about a spiral, a search curve. Heim plotted that path and muttered: "Should be here inside half an hour. However, first it'll move away. Which gains us some slight meterage. Be ready to start when I give you the word."

"We'll never make it, I tell you," Bragdon protested.

"Not so loud, you crudhead. We don't know that the thing still hasn't got ears."

As if in response, the robot stopped. A moment it rested on the whirr from its air blowers; the lattice horns wove around, tilted, came to a halt. . . . It continued along the spiral.

"You see?" Vadasz said with disgust. "Keep trying, Bragdon. You may yet destroy us."

The Peaceman made a strangled noise. "Don't," Jocelyn begged. "Please."

Uthg-a-K'thaq stirred. "A thought," he belched. "I do in truth weliewe we cannot outrun the enemy to shelt-er. But can Slaughter Machines count?"

Vadasz's breath hissed inward. "What's this?"

"We hawe lit-tle to lose," the Naqsan said. "Let us run, excewt for one who waits here and keews the laser. Can he get unnoticed in cutting range ow the wistol—"

"He could be killed too easily," Heim said. But hope shuddered anew in him. *Why not? Better go down fighting, whatever happens. And I might even save her.*

"Okay," he said slowly. "Give me the gun and I'll bushwhack our friend."

"No, skipper," Vadasz said. "I am no hero, but—"

"Orders," Heim said.

"Gunnar—" broke from Jocelyn.

Uthg-a-K'thaq plucked the laser out of Vadasz's grasp. "No time wor human games," he snorted. "We were not here without him, and he is the least usewul. So." He thrust the weapon at Bragdon. "Or dare you not?"

"Gimme!" Heim snatched for it.

Bragdon drew away. "That thing out there," he said in a remote voice. "What comes of war. Think about that, Heim."

Vadasz wallowed through the water and silt, after him. Heim saw the robot stop again to listen. "Get out of here!" Bragdon yelled. "I'll let it see me if you don't!"

The machine plowed through the bushes, over streams and stones, directly toward them.

No chance to argue. Bragdon must go ahead and be a damn fool. Heim got to his feet with a sucking splash. "Follow me—everyone!" Jocelyn slithered from the pool with him. They started off together.

Thundersmoke brawled before them. The engine chugged hoarse behind. A gun chattered. Mist swirled in their view, settled on their faceplates, blinded them. Staurn hauled them downward,

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laid rocks to trip them, brewed mud to glue their boots. Heim's heart smashed at his ribs as if it were also a cannon. He didn't know how much he leaned on Jocelyn or she on him. There was no awareness of anything but noise, weight, and vast drowning waters.

Vadasz shouted.

Heim lurched against a boulder, got his back to it and lifted his automatic. But the hunter machine was not about to pounce.

Near the thing was, most horribly near. Bragdon's tiny form crept from ambush. Up to that iron body the man went, braced himself on widespread legs, aimed his pistol and fired.

The laser sword hewed. Metal framework glowed white where struck. Trigger held fast, Bragdon probed for the power cable.

Something like a bull's bellow rose out of the robot. It swung clumsily around. Bragdon stood where he was, dwarfed under its bulk, steadily firing. Ports opened in the armor, where they were able. Guns came out. A few still worked. Heim hauled Jocelyn to the ground and laid himself above her. A wild beam hit the boulder where he had made his stand. Rock flowed from the wound.

The guns could not reach as low as Bragdon. The machine clanked forward. Bragdon severed the detector powerline. "Run, Victor!" Vadasz howled. "Get out of the way!" Bragdon turned and tripped. He went on his face. The robot passed over him.

And on, firing, firing, a sleet of bullets, shells, energy beams, poison gases, destruction's last orgasm; senseless, witless, futureless, the Slaughter Machine rocked south because it chanced to be headed that way.

Heim rose and hurried toward Bragdon. *Maybe he's all right. An air cushion distributes weight over a large area.* Bragdon did not stir. Heim came near and stopped.

Dimly, through the clamor of geysers and departing engine, he heard Jocelyn call, "I'm coming, Gunnar!"

"No," he cried back. "Don't."

There were sharp blades in the bottom of the iron shell. They must move up and down, clearing the ground by a few centimeters. He did not want her to see what lay before his eyes.

VII

Drumroll in the earth: vapor puffed from a sulfurous cone. Then the spout came, climbing until a pillar for giants stood white and crowned. Another died; but there were more, everywhere among the tumbled black stones, as far as Heim could see through a whirl of fog. That was no dis-

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tance. He groped in chaos. Water chuckled around his boots, over and over again he slipped on wetness. The damp was interior too, sweat soddened his skin. Strange, he thought in what detachment he could muster from the weariness with which he trembled, strange that his lungs should be a dry fire.

Jocelyn's gasps reached him, where she crawled at his side. Half his strength was spent to help her along. Otherwise he heard nothing but the titanic forces that churned about them. Uthg-a-K'thaq's broad shape was visible ahead, leading the way. Vadasz toiled in the rear. Light waned as the sun sank behind the mountain, to end the day after they piled a cairn over their newest dead.

We've got to keep going, chanted idiotically in Heim. *Got to keep going. Got to keep going.* And underneath: *Why?*

For the sake of the battle he intended to fight? That had become meaningless. The only battle was here, now, against a planet. For Lisa, then? A better cause, that she should not be fatherless. But she could well survive him. Grief dies young in the young. To discharge his own responsibility to those he commanded? Better still; it touched a deep-lying nerve. Yet he was no longer in command, when his engineer saw more clearly and moved more surely then any human could.

Reasons blew away like geyser smoke. Death lured him with promises of sleep.

Animal instinct raised his hackles. He cursed the tempter and went on.

A mudpot bubbled on a level stretch. The farther bank was a precarious hill of boulders. Water rushed among them, struck the mud below and exploded in stream. Uthg-a-K'thaq beckoned the others to wait, flopped down on his belly and hitched himself forward. Mineral crusts were treacherous, and whoever fell into one of those kettles might be cooked alive before the rest heaved him out against gravity.

Jocelyn used the pause to lie flat. Maybe she slept, or fainted; small difference any more. Heim and Vadasz remained standing. It would have been too much effort to rise again.

On the edge of visibility, among the clouds around the hilltop, Uthg-a-K'thaq waved. Heim and Vadasz wrestled Jocelyn back to her legs. The captain led the way, stooped so he could make out the leader's track through gray soft precipitate powders.

When he came to the rise, hands and feet alike must push him over the high-stacked stones. Often a lesser chunk got loose and bounced hollowly down to the mudpot. Safest would have been to go one at a time, his dimmed consciousness realized now—

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"Gunnar!"

He scrambled around. Almost he went down in the same minor avalanche where Jocelyn rolled.

Somehow he was up, bounding through the hot fog as he had plunged to attack centuries ago. Stones turned under his soles, water spurted where he struck. Nothing existed but his need to stop her before she went into the cauldron below.

Her limbs flailed, fingers clawed, dislodged more rocks that tumbled across her. He reached bottom. His boots sank in ooze. There was not too much heat on this fringe of the pot. But had there been, he would not have noticed. Those boulders which had spun downward faster than the woman and sunk immediately gave footing. He knelt and braced himself.

The mass poured at him, around him. He laid hold on Jocelyn's air cycler and became a wall.

When the landslip was done, he pulled his smeared self clear and fell beside her. Vadasz saw they would go no further than the verge of the mudsink, ended his own haste, and picked a cautious way to join them. Presently Uthg-a-K'thaq arrived too.

Heim roused some minutes later. The first he noticed was the Naqsan's voice, weirdly akin to the voice of the kettle: "Wery much harm wor us. Lac-King him, can we long liwe?"

"Joss," he mumbled, and fought to rise. Vadasz helped him. He leaned on the Magyar a while until strength returned.

"Hala Istennek," gusted from the helmet beside his. "You are not hurt?"

"I'm okay," Heim said. His entire being seemed one bruise, and blood welled from abrasions. "Her?"

"Broken leg at the minimum." Vadasz's fingers touched the unnatural angle between left hip and thigh of the motionless figure. "I don't know what else. She is unconscious."

"Her suit is intact," Uthg-a-K'thaq said. *First silly remark I've heard from him,* trickled through Heim. *If the fabric had torn we wouldn't worry about bones.*

He shoved Vadasz aside and bent over her. When the faceplate had been wiped clean, he could make out her features in the dimming light. Eyes were closed, lips half parted, skin colorless and sweat-beaded. He was dismayed at how sunken her cheeks were. Laying an audio pickup against her speaker, he was barely able to detect breath, rapid and shallow.

He poised on his knees. To stave off the future, he asked, "Did anyone see what happened?"

"A stone moved when she put her weight on," Vadasz said. "She started to roll and half the hillside went with her. Some recent quake must have unstabilized it. I will

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never know how you got down here so fast, not falling."

"Who cares?" Heim gritted. "She's in shock. I don't know if that's due to nothing more than the leg fracture, she being so weakened to begin with. Could be worse injuries, like spinal. We don't dare move her."

"What then can we do?" the engineer asked. Heim realized that command had passed back to him.

"You two go on," he said. "I'll stay with her."

"No!" Vadasz exclaimed involuntarily.

Uthg-a-K'thaq spoke in some remnant of his pedantic way. "You can giwe her no aid, woth sealed in airsuits. We others may well need an ex-tra wair ow hands. A diwwicult wassage is wewore us."

"As battered as I am, I'd hinder you more than help," Heim said. "Besides, she can't be left alone. Suppose there's another rockslip, or this mudpot boils higher?"

"Cawtain, she is done already. Unconscious, she cannot take her grawanol. Without that, in shock, heart wailure comes quickly. Kindest to owen her helmet now."

Rage and loss flew out of Heim: "Be quiet, you cold-blooded bastard! You goaded Bragdon to die, on purpose. One's enough!"

"*Gwurru,*" the Naqsan sobbed, and retreated from him.

The venom dissipated, leaving emptiness. "I'm sorry, C.E.," Heim said dully. "Can't expect you to think like a Terrestrial. You mean well. I suppose men's instincts are less practical than yours." Laughter shook chains in his throat. "Speaking about practicality, though, you've got something like an hour of light. Don't waste it. March."

Vadasz considered him long before asking. "If she dies, what will you do?"

"Bury her and wait. I can stretch out the water in these canteens if I sit quiet, but you'll need the laser for your own drink."

"And you will then have nothing to, to fall back on. No, this is foolishness."

"I'll keep the automatic, if that makes you happier. Now get going. I'll hoist a beer with you yet."

Vadasz surrendered. "If not on ship," he said, "then in Valhalla. Farewell."

Their hands clasped, pair by pair. Minstrel and engineer began to climb. A geyser spat not far off, steam blew down the wind, the two shapes were lost to sight.

Heim settled himself.

A chance for sleep, he thought. But that desire was gone. He checked Jocelyn's breathing—no change—and stretched out beside her, glove upon her glove.

Resting thus, he grew clearer headed. With neither excitement nor despair he weighed the likelihood of survival. It wasn't great. Zero for Joss, of course, barring miracles. For the other three,

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about fifty-fifty. The walkers should emerge from Thundersmoke tomorrow evening, more or less. Then they had perhaps two days (allowing those tough bodies one without chemical crutches) in which to cross the high meadows toward Wenilwain's castle. It was still distant, but the folk of the Hurst ranged widely. Doubtless they even crossed above Slaughter Land now and then, on their way to the plains and the sea. (*Hm, yes, that's why they leave the robots alone. A free defense. Carnivore souls for sure.*) Given a break, the travelers might have been spied days ago.

Well, the break was not given. So Joss must die in this wet hell, under a sun whose light would not reach Earth for a century: Earth of the greenwoods where she had walked, the halls where she danced, the garden where she played her flute for him until he frightened her with babbled impossibilities. As that sun smoldered to extinction behind the fogs, Gunnar Heim pondered the riddle of his guilt toward her.

He had forced her here. But he did so because if she stayed behind she would betray his hopes for his planet. (*Are you certain of that, buck? In fact, are you certain your way is the right one?*) The choice would never have arisen except for the plot she had joined in. Yet that was evoked by his own earlier conspirings.

He gave up. There was no answer, and he was not one to agonize in unclarity. This much he knew: if the time aboard the *Quest* had not matched those dreams he buried long ago for Connie's sake, it had still been more dear than he deserved, and when Joss died a light would forever go out in him.

Blup-blup, said the mudpot beneath. A hot spring seethed louder. A geyser roared in thickening dusk, echoes resounded from unseen walls and water rilled among the shadow shapes of boulders. Heavy as his own flesh pressed against unyielding painful jumble, night flowed across the world.

Gloom lightened when the nearer moon rose, close to full, a shield bigger than Luna seen from Earth, iron bright and mottled with a strange heraldry. Heim dozed a while, woke, and saw it well above him. A thin glow surrounded the disc, diffusion in the upper mists. But most of the sky was open and he could make out stars. The lower fog rolled ashen through Thundersmoke gulch.

His drowsy eyes tried to identify individual suns. Could that bright one near Lochan's ghostlike peak be Achernar? If so, curious to look from here upon his emblem of victory. *I wonder if Cynbe could be watching it too. Wherever he is.*

Better check on Joss. He commenced pulling his stiffened frame off the rocks.

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What's that?

WHAT'S THAT?

The sight was a lightning bolt. For a second he could not believe. A long V trailed across the moon—

Staurni, in flight home to the Hurst!

Heim soared erect. "Hey! Hallo-o-o! You up there, come down, help, help, help!"

The bawling filled his helmet, shivered his eardrums, tore his larynx; and was lost within meters of noise-troubled air. He flapped his arms, knew starkly that the blurring vapors made him invisible from so high above, saw the winged ones pass the disc and vanish into darkness. A beast yell broke from him, he cursed every god in the cosmos, drew his automatic and fired again and again at heaven.

That little bark was also nothing. And not even a glint from the muzzle. Heim lifted the useless thing, that could only kill Joss, to hurl it into the mud.

His hand sank. The metal moonlight seemed to pierce his skull, he was instantly cold, utterly aware, tracing the road he must follow as if on a battle map.

No time to lose. Those wings beat fast. He squatted, unbuckled his air system, hauled its packboard around in front of him. The valve on the hose into his suit closed readily, but the coupling beyond resisted. And he had no pliers. He threw all his bear strength into his hands. The screw threads turned. The apparatus came free.

Now he was alone with whatever air his suit contained; the recycler depended on pressure from the reserve bottles. He cracked their valves. Terrestrial atmosphere, compressed more than Staurn's own, streamed forth.

The reaction must be kindled, and he had no laser. Heedless of ricochet or shrapnel, he laid the automatic's mouth against the cock and pulled trigger. The bang and the belling came together. Alloy shattered, the bullet screamed free, the air tanks became a lamp.

Its flame was wan blue under the moon. Heim held the packboard steady with one hand and fanned with the other. "Please," he called, "please, look this way, she'll die if you don't." A far-off part of him observed that he wept.

The fire flickered out. He bent near the pressure gauge, trying to read it in the unpitying moonlight. Zero. Finished.

No, wait, that was zero net. There were still three atmospheres absolute. And hydrogen diffused inward faster than oxygen did outward. Explosive mixture? He scrambled to put the bottles behind a large rock. Leaning across, he shot straight into them and threw himself down.

Flame blossomed anew, one

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fury and the crash toning away, whine of flying fragments, a grating among lesser stones as they sought new rest, nothingness. Heim got carefully up.

An infinite calm descended upon him. He had done what he could. Now it was only to wait, and live or die as the chance befell. He returned to Jocelyn, listened to her breath, and lay down beside her.

I ought to be in suspense, he thought vaguely. *I'm not. Could my air be poisoned already?—No, I should last an hour or so if I don't move. I'm just . . . fulfilled, somehow.* His eyes went to the moon, his thoughts to Connie. He had no belief in survival after death, but it was as if she had drawn close to him.

"Hi, there," he whispered.

And—"Hai-i-i-i!" winded down the reaches of heaven, the air sang and bat wings eclipsed the moon. Weapons flashed clear, the flock whirled around in their search for an enemy, fangs glittered and devil shapes came to earth.

Only they didn't act like devils, once they saw. A warrior bayed into the midget transceiver he carried. A vehicle from the Hurst descended within minutes. Her mother could not have raised Jocelyn more tenderly onto a stretcher and into the machine. Wolf-gray Wenilwain himself connected an oxygen bottle to Heim's suit. The flyer lifted and lanced eastward for Orling.

"But . . . listen . . . *jangir ketleth—*" Heim desisted. His few pidgin phrases couldn't explain about Endre and C.E. No matter, really. He'd soon be at the yacht, Wong could interpret via radio, the last survivors would be found no later than sunrise. Heim fell asleep smiling.

VIII

Her cabin was quiet. Someone had hung a new picture on the bulkhead where she could see it: a beach, probably on Tahiti. Waves came over a sapphire ocean to foam against white sand; in the foreground, palm trees nodded at Earth's mild winds.

She laid down her book as the tall man entered. Color mounted in her face. "Gunnar," she said very low. "You shouldn't be up."

"Our medic wants me on my back till we leave," he said, "but the hell with him. At least, I had to come see you before you go. How're you feeling?"

"All right. Still weak, of course, but Dr. Silva says I'm making a good recovery."

"I know. I asked him. Enzyme therapy is a wonder, eh?" Heim searched for a phrase. Nothing sufficed. "I'm glad."

"Sit down, you idiot!"

He pulled the lounger close to her bed and lowered himself.

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Even in a flyer, the trip had left him lightheaded. Several days yet must pass before his vigor was restored. The gun at his hip caught on the adjuster console. He pulled it free with a muttered oath.

Amusement touched her lips. "You needn't have brought that. Nobody's going to kidnap you."

"Well, hopefully not. Call it insurance."

Her smile faded. "Are you that angry?"

"No. Two good men died, the rest of us went through a nasty time, I'm sorry it happened, but you can't take an episode in a war to heart."

Her look reminded him of a trapped small animal. "You could press charges of murder."

"Good Lord!" he exclaimed. "What kind of swine do you take me for? We went out together on a field trip. Our engine failed, we made a crash landing where one man was killed, and hiked after help. If your people will stick by that story, mine will."

A thin hand stole toward him. He took it and did not let go. Her hazel eyes caught him in turn. Silence grew.

When he could hold out no more, and still lacked meaningful words, he said, "You're hauling mass at dawn, right?"

"Yes. The scientists—those who thought this was a genuine trip—they want to stay. But Captain Gutierrez overruled them. We've lost our purpose." Quickly: "How long will you remain?"

"About another Earth week, till the new missile units are fitted. To be sure, we'll lose time getting out of the planetary system. The Lodge has to escort us, and won't let us arm our warheads till we're beyond defensive limits. But still, I figure we'll be on the move inside of ten days."

Again muteness, while they looked at each other, and away, and back. "What do you plan on doing at home?" he tried.

"Wait for you," she said. "Pray for you."

"But—no, look, your, uh, your political work—"

"That's no longer relevant. I haven't changed my mind—or have I? It's hard to tell." Her free hand rubbed her forehead confusedly. The motion stirred her hair, awakening light in the chestnut tresses. "I don't think I was wrong in principle," she said after a bit. "Maybe I was in practice. But it doesn't matter any more. You see, you've changed the universe. Earth is committed."

"Nonsense!" His face smoldered. "One ship?"

"With you her captain, Gunnar."

"Thanks, but . . . but you flatter me and—Wait, Joss, you do have a job. Sentiment at home might swing too far in the other direction. The last thing any sane person wants is a jehad. You keep

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telling 'em the enemy is not too evil to live. Remind 'em there'll be peace negotiations eventually, and the more reasonable we are then, the more likely the peace is to last. Okay?"

He saw that she braced herself. "You're right, and I'll do my poor best," she said. "But talking politics is only an evasion."

"What do you mean?"

Her mouth quirked afresh. "Why, Gunnar, I do believe you're scared."

"No, no, nothing of the sort. You need rest. I'd better go."

"Sit," she commanded. Her fingers closed about his palm. The touch was light, but it would have been easier to break free of a ship grapple.

Red and white chased each other across her countenance. "I have to explain," she said with astounding steadiness. "About what happened earlier."

His skin prickled.

"Yes, I hoped to persuade you not to fight," she said. "But I learned more was involved. Infinitely more."

"Uh, uh—the past, sure—"

"When you come back," she asked, "what are *you* going to do?"

"Live quietly."

"Ha! I'd like to make book on that. For a while, though, you will be home on Earth." Her tone dropped. "Oh, God, you must." She raised her head. "I'll be there too."

He must summon so much will to speak that none was left for holding his eyes off the deck. "Joss," he said, word by word, "you remember too many things. So do I. There was that chance once, which we did better to pass up. Now we met again, both free, both lonesome, and I admit I also thought the chance might have come again. Only it hadn't. Time switched the dice on us."

"No, that isn't true. Sure, at first I believed otherwise. Our casual meetings after I returned from Ourania, and the political barrier between us—damn all politics! I thought you were simply attractive, and half that must be because of a friendship we'd never revive. I dreamed a little on the way here, but they seemed like just ordinary woman-type daydreams. How could you hurt me?" She paused. "It turned out you could."

"I'm trying not to," he said desperately. "You're too good for soothing with lies."

She let his hand go. Her own fell open upon the blanket. "So you don't care."

"I do, I do. But can't you see, I didn't break with Connie the way you did with Edgar. When she, well, helped me about you, we pulled still closer together. Then she died. It cut me off at the roots. I guess without thinking about it I've looked ever since for a root that strong. I'm a coward, afraid to settle for anything less, because

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afterward someone else might happen by who—It wouldn't be fair to you."

She rallied. "You've outgrown believing in permanent infatuation, haven't you? We understand what really matters between two people. If you're trying to warn me you might be restless—I wouldn't be jealous at your wandering a little. As long as you always came back."

"I don't want to wander. Physically isn't important. I wouldn't want to mentally. That one time was bad enough. And when I heard about New Europe, I remembered a girl there. I was young and stupid, skittish about being tied down, which is especially bad for a Navy man. So I left when my leave was up without committing myself. Next time I arrived, she'd moved; I dithered whether to track her down, finally didn't, and soon after got posted too far away to visit that planet. Now—"

"I see. You want to make sure about her."

"I have to."

"But that was twenty years or more ago, wasn't it?"

He nodded. "I've got to find out what happened to her, see her safe if she's still alive. Beyond that, yes, I'm doubtless being foolish."

She smiled then. "Go ahead. I'm not too worried."

He rose. "I must leave now. Neither of us is in any shape for emotional scenes."

"Yes. I'll wait, darling."

"Better not. Not seriously, anyhow. Hell alone knows what'll happen to me. I might not return at all."

"Gunnar!" she cried, as if he had struck her. "Never say that!"

He jollied her as best he could, and kissed her farewell, and departed. While his pilot flitted him the short way back to the yacht, he looked out. A flock of Staurni hunters was taking off. Sunlight flared across their weapons. The turmoil in him changed toward eagerness—to be away, to sail his ship again—as he watched those dragon shapes mount into the sky.

Color proofs of this month's cover . . .

(as well as for covers of most recent issues) are available to our readers. These proofs are mailed flat, contain no overprinting, and are suitable for framing. Send 75¢ for one, $2.00 for three (different), or $3.00 for six (different) to Mercury Press, Box 271, Rockville Centre, N. Y. 11571. Please specify if you wish this month's fine wrap-around cover by Bert Tanner included.

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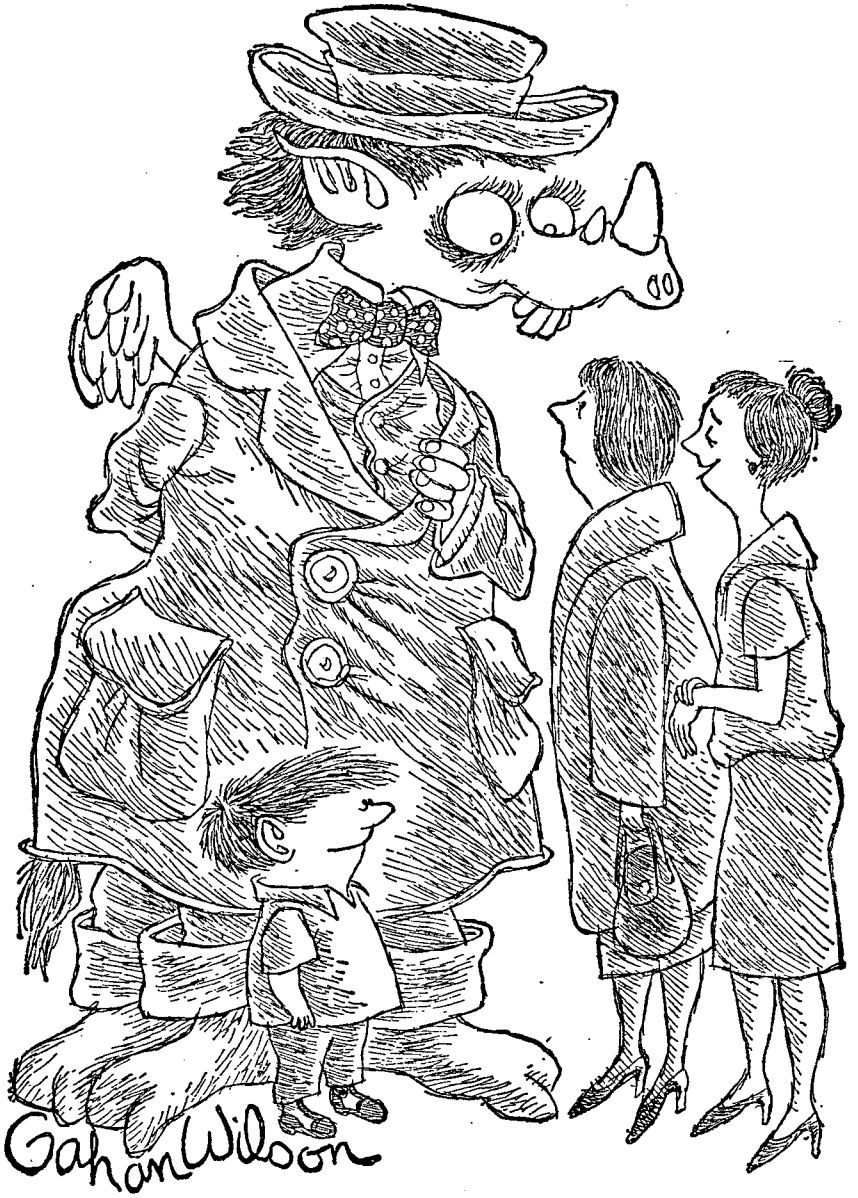

"This is Willy, and this is Willy's imaginary playmate."

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"I don't have much of a biography," writes Robert Rohrer, "since I haven't been alive very long. I'm a student at Emory University; I have lived most of my life in Atlanta; I started writing when I was 8; and intend to go on writing in some form or another until I am dead or otherwise debilitated. My favorite composer is Brahms; my favorite writers are Shakespeare and Ernest Hemingway; my favorite movie is Citizen Kane."

Society has used death by law to avenge its injuries for more than 4,000 years, and although the list of capital crimes has diminished, it is still fair to say that public opinion is against abolition. What does the future hold? Mr. Rohrer speculates in the grim and terse shocker below.

KEEP THEM HAPPY

by Robert Rohrer

THE OBLONG "GUILTY" LIGHT flashed green from the surface of Kincaid's desk. Kincaid put the fingertips of his two huge hands together and watched with emotionless eyes the door-panel in the wall on his left. The panel slid open, and a plump man in a glistening gray one-piece stepped into the hall where Kincaid always sat.

The plump man was surprised. He was not surprised by Kincaid. He had been surprised before he opened the panel and saw Kincaid sitting in the antiseptic whiteness of the departure hall. He had been surprised in the courtroom that he had just come from. Kincaid knew why the plump man had been surprised, but he did not tell the plump man that he knew, because that would have spoiled it.

The muscles of the plump man's face were straining and pulling the flesh of his cheeks, and lips, and forehead, and chin, into an openness that let his emotion pour into the air, let his joy roll from his pores in invisible billows. Drops of fear-perspiration stood evaporating on his forehead. "God!" he breathed.

Kincaid smiled. He said, "Congratulations."

The plump man saw Kincaid

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for the first time. The fat balled up around the man's eyes as he grinned. "I'm free!" he said in a shouting whisper. "Free!"

"That you are," said Kincaid, opening a drawer in his desk. "You'll want your things, won't you?"

"Things? Oh, things! Things! Yes, please!" The man joggled to Kincaid's desk. "Things. I thought. . . ."

Kincaid spread the plump man's personal effects over the desk top. "You thought?" he said, smiling.

"Well, I—I didn't think—well, that they'd let me off." His words were light with wonder.

"The courts are usually fair," said Kincaid.

"Oh, but, yes, I know, but I—but I thought they would convict me, I was sitting in there and I—was afraid. I was so afraid. I was guilty, you see, but they let me off! Guilty, and they let me off!"

"Oh, now, you shouldn't say a thing like that," said Kincaid. "You've been acquitted."

"But I *was,* I *was,*" the plump man insisted. "I went out and bought a blaster and killed her. I was guilty."

"Well then, I guess you deserved a few uncomfortable moments, didn't you?"

"He he, yeah. But by God, I feel better now."

"Good. Wallet, watch, lighter, cigarettes, ten dollars and twenty-four cents. Correct?"

"Correct, correct!" said the man. His face was set in the half-smile of joy and astonishment which Kincaid saw so often. "Absolutely! Thanks, thank you!" The man fumbled with his wrist watch, then his wallet and the other articles. "Man, I can't wait to—to—"

"To see the open sky?"

"Yes, yes. To see the open sky. I thought—"

"I know," said Kincaid understandingly. "Here." He pressed a button on his desk, and a huge panel in the ceiling slid open, and above was the blue cape of the sky, threaded with long, thin clouds.

"Aaahh," said the man. "Aaah."

Kincaid drew back his arm and brought the open edge of his hand down on the man's neck. The man's neck broke with a snap. The man collapsed like a deflated balloon.

Kincaid lowered the dark goggles that sat up on his moulded skull-helmet and walked behind the desk. There was a green switch on the desk. Kincaid threw the switch.

A floor-panel zipped from under the dead man, and a seething, protean mass of white fire snatched the corpse down and tore at it. Kincaid pulled the green switch back and the panel closed.

Kincaid raised his goggles and sat down behind his desk and waited. Finally Berg from Assignments came down.

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Berg put a psych analysis on the desk before Kincaid. The square I. D. on the brown folder said, "Lisa Medtner, M.D."

"A woman this time," said Berg unnecessarily.

"A sure thing?" asked Kincaid, leafing through the analysis.

"Uh-huh. Got her on tape, right in the act. Husband. Cold as ice."

"Hm. When's the trial?"

"Day after tomorrow. She'll be here in about two hours, I think."

Kincaid nodded. He was reading the psych report. "Thanks."

"Sure thing. Remember," said Berg, tapping the black plate with white letters which was screwed to Kincaid's desk, "keep 'em happy." He laughed at the good-natured banality and moved away.

Kincaid looked for a second at the plate that Berg had touched. KEEP THEM HAPPY.

Lisa Medtner came into the hall between two matrons. One of the matrons, who Kincaid knew, said, "This is Doctor Lisa Medtner."

Kincaid stood up and smiled at Lisa Medtner. "I'm glad to meet you, Doctor Medtner," he said.

Lisa Medtner half-smiled and said, "I am not glad to meet you. I had rather not be here at all." She spoke with a noticeable accent.

"I know," said Kincaid. "That's all," he said to the two matrons.

Lisa Medtner was blonde and had striking pale features. She had ripped her husband in half with a force-pistol. "You will be here for as long as your trial lasts," said Kincaid.

"That should not be long," said Lisa Medtner with a humorless laughing sound.

"You sound bitter."

"I know what the verdict will be."

"Did you do it?"

The muscles of her jaw tensed and squared the cold white beauty of her face.

"It's all right to tell me. I've taken an oath not to divulge anything that passes between me and a prisoner."

Lisa Medtner paused. Then she said, "Yes, I killed him."

One wall down. "Why?"

"I would rather not discuss it."

"Of course." The Alpine slopes radiated their own peculiar heat. For the first time, Kincaid noticed Lisa Medtner's face.

"What does this mean?"

"What?"

She was looking at the black plate on the desk. She read, "'KEEP THEM HAPPY'."

"That's the code of the Penal College," said Kincaid. "I am to make you as comfortable as I can for as long as you are here."

She looked at him with cynical amusement. "And how will you know how to do this?"

"I've had intensive training in psychology."

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"You have read the psych analysis they ran on me."

"Yes."

"So now you know all about me."

"That's right."

Again her lips curved in a one-sided half-smile. "What am I like?"

"Don't you know that?"

The smile jumped away. She did not answer.

Kincaid said, "Your cell is this way."

That night before he turned in Kincaid went into the chamber that opened off the main hall, and looked at Lisa Medtner through the bars of her cell. She was already asleep on the single cot that crouched beside one polished-iron wall. Her head was resting stiffly on the pillow and her face was upturned. Kincaid stood outside the cell for a long while and studied carefully her face and the rest of her, outlined beneath the sheets. Then he turned in.

In the morning he came to her cell. She was eating the breakfast that had come through the automat in one wall of the cell.

"Do you want to talk?" he asked.

"No." She did not look up.

"It would be easier if you talked."

She stopped eating and looked up. "No it wouldn't," she said. "Not for me. Perhaps it would be easier for a man, or for the whores you probably have here most of the time, but I do not wish to talk."

"We don't get many whores. Not genuine ones, anyway."

"I was speaking figuratively. Please go away."

"You aren't happy, are you?"

"No, I am not happy. I am about to be tried and executed for killing my husband and I am not happy."

"Why did you kill him?"

She stared furiously away from him.

"Why did you kill him?" Kincaid repeated.

"I killed him because he cheated on me! Are you satisfied?"

"Did you love him?"

The struggle was brief. "No. I hated him. I hate—I—"

"You hate me?"

She laughed a short, painful laugh. "Hardly. I am sure that I will, if you will not leave me alone. I can learn to hate you quite easily. Go away. Go away."

"You need someone very badly."

She looked up at that, and fixed his eyes with hers. He let his eyes complete the thought of his words, and she saw it and drew in a sharp breath of rage and wheeled from her chair and turned her back to him. She stood facing the opposite wall with her arms close around her as though she were very cold. Kincaid left.

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That night Kincaid came to her cell. She was standing facing the wall, in much the same position he had left her in. Kincaid made the key clatter loudly in the lock, and he swung the cell door open and let it bang back into the bars. She did not turn. She said nothing.

Kincaid stood in the doorway for several moments, looking at her back. Then he closed the door behind him. He closed the door slowly so that the snap of the latch crazed the air.

Lisa Medtner gave a little start. She turned around, very slowly pivoting on one heel, and looked at Kincaid. Kincaid had sat in the small wooden chair beside the bars, and was looking at Lisa Medtner with his arms crossed.

Lisa Medtner stood still and stared beyond Kincaid for a long moment with her head cocked to one side. "The executioner's tax, is it?" she said finally. "My soul goes to the state and my body goes to you."

"You're very bitter."

"I do not wish to talk of my bitterness. I wish to be left alone."

"You are very beautiful."

"I have been told that. Many times."

"I'm telling you this time."

"And you are my jailer. You are violating your oath, you know that. You have made a mockery of it ever since I came, with your questions, your whining innuendos, your—"

"What I said this morning is true. The psych analysis showed it. You need—"

"I do not need you. I hate you."

Good. Kincaid shook his head slowly and made reproving noises with his tongue.

"I will report you," hissed Lisa Medtner.

"Nothing leaves this division that I don't want to leave it," said Kincaid.

Lisa Medtner's face was much paler than it was normally, and her neck was red with anger. She shouted, "Very well, then, come ahead, collect your hangman's fee!"

"You think I won't?"

"No, I think that you will. And it will mean *nothing* to me!"

Kincaid pursed his lips. He remained in the wooden chair, rocking back and forth gently on two of the legs at a perilous angle.

Lisa Medtner said in a furious whisper, "Get out. Get out of here."

Kincaid laughed. "Those bars are inclusive, not exclusive. I'll stay here as long as I like. I'll stay here 'til morning."

Lisa Medtner took a breath. "You are supposed to make me as comfortable as possible until the trial is finished. Make me comfortable and *leave me.*"

Kincaid said, "Make yourself comfortable. I'm busy. Looking."

Dr. Medtner did not spit the obscenity Kincaid expected. Instead she sat suddenly on the edge

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of her cot, holding her narrowed, gleaming eyes on him always. She looked at him for several minutes. The stark hatred that pulsed from her eyes never diminished in fury.

Then she snapped the eyes from him and lay mechanically back onto the cot. For a long while she glared at the ceiling with the same hate. Then her eyes closed.

Kincaid watched her for a long time. She was very beautiful. She was much more beautiful than the ones that usually came here. He let her beauty burn fuzzily into his throat for a while. Then he rose and walked to her cot and looked down at her face.

She was trembling. Her eyes were shut, but they twitched, and her entire body trembled, trembled. Kincaid stooped slightly over her. He cupped his hand and outlined the curve of her cheek with his thumb and forefinger, touching only the thin fuzz that stood out from her skin. Her trembling increased, but her eyes stayed shut.

Kincaid straightened and turned and walked out of the cell and closed the cell door quietly as though he thought she were asleep.

There was the hum of the electric generators in the walls.

"How is the trial?"

"How can it be? They have it on tape, I know they must."

"There aren't cameras everywhere. They may not have it on tape. If they have it on tape, why haven't they executed you already?"

"You should know that better than I."

"Yes, I should, but I don't. For all I know they may try only prisoners who they haven't taped."

"You are trying to make me feel better."

"If I knew I would tell you."

"Would you?"

"I would tell you."

"I love you."

"I love you."

"Oh, God, I love you."

Her hands were cold against his back. The cot was very small, but they did not care.

After a few minutes she said, "What if I am to die?"

He did not answer.

"You are the one, aren't you."

"Yes."

"You will—you will—"

He waited. Then he said, "I can get you out of here."

Her body tensed. "You can get me out."

"Yes. After it is over you would come in here and I would k—execute you. There is no one else in here during an execution. There is a sky panel in the ceiling. If it comes to that, I can get you out."

"But what—what about you, when they find out—"

"I am supposed to cremate the bodies after it is over. They would not check the incinerator before I could get something, a dog, two dogs, in it for ashes."

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He could feel that she was very happy. Her face remained set. "You would do that," she said. Then she knew that he was lying, that the ashes would be checked and that dogs' ashes would never be mistaken for a human being's. "You would do that for me." She kissed him again, hard and for a long time.

Kincaid sat behind his desk and waited and then the "GUILTY" light flashed. Kincaid waited some more, with his hands wide on his knees, and finally the panel slid open and Dr. Lisa Medtner stepped from the dark courtroom into the glaring whiteness of the hall.

She looked to Kincaid, and the surprise was much more beautiful on her face than on any other he had ever seen. "I am free," she said.

"I know. I told you they might not have a tape." He opened the drawer and began taking her things from it and putting them on the desk.

She stood very still on the edge of his eye as he did this. When he looked at her again she was not looking at him and she was not moving. She was staring down past a corner of his desk.

He did not interrupt her in her silence. He waited for her to find the way to say what he knew she must say. He rose, and she knew that he was waiting, but she did not look out from her cubicle. When finally she spoke, it was not to say what Kincaid had expected at all.

"Come with me."

"What?"

"Come with me, *please*," she said fiercely. Still she did not look at him.

"Look at me," said Kincaid.

She turned her face to his.

"You meant it?" said Kincaid.

"Yes," said Lisa Medtner. "I meant it. I wanted to escape, yes, but I—I *mean* it—" She halted in her words.

Kincaid knew what she could not say. He knew. *I need you. I need you.* He held her eyes for a moment. Then he said, "All right. Let's go."

She was in his arms and holding to him and trembling against him. He held one arm around her back tightly and stroked the nape of her neck with the free hand. They stood quietly for several minutes.

Finally she pulled away and looked at him and smiled. "Go," she said.

He smiled back, thinly. He followed her from behind the desk. He slowed his step slightly and let her move a few inches ahead of him. Then he drew back his open palm and brought it home.

She fell suddenly and heavily, as they all did. He looked down at her. The smile still played across his lips. It was more like a sneer than a smile. *Keep them happy.*

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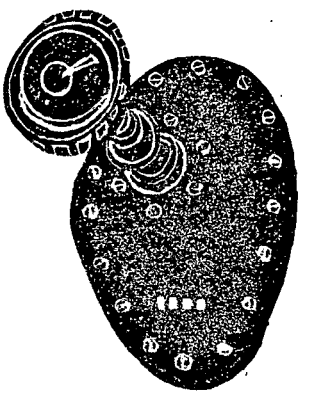
Keep them happy every time.

He walked behind his desk and pulled the dark goggles down over his eyes. He threw the green switch. The body disappeared into the crystalline ball of white fire under the floor. Then the panel closed, and the floor itself was white and spotless, as though no one had ever stood there.



EMSH-

IMAGINARY NUMBERS IN A REAL GARDEN

Given: one bold mathematician.
Uncertain of his own position,
he drew two lines and at their joint,
where angels danced, he made his •
Then reached into the void and caught
the faceless essence of the 0,
and taught us not to fear ∞
but worship his serene divinity,
whose sacraments at first seem pale;
yet if men hunger for a Grail,
they still may seek, beyond the sun,
the rare $\sqrt{-1}$.

—GERALD JONAS

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BOOKS

THE DAY NEW YORK WENT DRY, **Charles Einstein,** Gold Medal, 40¢
SWEENEY'S ISLAND, **John Christopher,** Simon & Schuster, $4.50
THE MIND BENDERS, **James Kennaway,** Signet (reprint), 60¢
THE WORLDS OF ROBERT F. YOUNG, Simon & Schuster, $4.50
SHORT FRIDAY, **Isaac Bashevis Singer,** Farrar, Straus & Giroux, $4.95
THE FAIR, **Robert Nathan,** Knopf, $3.95
THE SPIRE, **William Golding,** Harcourt, Brace, and World, $3.95
THE AMBIDEXTROUS UNIVERSE, **Martin Gardner,** Basic Books, $5.95
THE NINTH ANNUAL OF THE YEAR'S BEST SF, **Judith Merril, Ed.,** Simon and Schuster, $4.95

More and more, authors from the literary "mainstream," or from other specialized "categories" of publishing, have been trying their hands at science fantasy. Some of them have done very well indeed. Certainly their work tends to show more attention to prose techniques and literary polish than that of many of the most-admired Old S-F Hands. But it is unusual for a complete "outsider" to produce a work of good "solid science fiction." It is even more uncommon when the first try is done at full novel length.

Of the books on hand this month, three are novels which meet all the basic requirements of the highly specialized literary discipline called science fiction. This would be moderately surprising all by itself; it is even more so, since only one of the authors—John Christopher—is an established s-f writer. Charles Einstein has, I believe, done an occasional short story in the field before, but the bulk of his work has been in other fields. James Kennaway, to the best of my knowledge, has never written anything resembling science fiction, before this.

No. I am *not* about to define what I mean by "science fiction" as distinct from "fantasy," or from the more inclusive "science fantasy." The *What is it anyhow?* game has been played too long by too many (still-undecided) experts for me to begin it in the space available here. But I can say what *I* mean when I talk about the "basic requirements of science fiction."

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Anthony Boucher has called it "disciplined imagination," and that is as good a place to start as any. The most basic ingredient of all is a way of thinking. *Science* is not technology, or laboratories, or thick books of data tables; it is a *method*. The trappings of technology do not make science fiction; neither does the traditionally supernatural make a fantasy. There has been some first-rate scific about werewolves and gnomes. Ray Bradbury, on the other hand, has written some fine and meaningful space fantasy. And C.P. Snow produces volume upon volume of science-background philosophic fiction. In all three kinds of work, there is logic involved, and imagination; both qualities are vital to fiction of any kind. The specific for science fiction is the application of the logic *to* the imagination.

Properly applied, the result will be a story in which a believable human problem is directly related to a scientific, technological, or other environmental problem, in such a way that the resolution of one must involve the solution of the other. For the writer, this means learning narrative techniques of a highly specialized sort. "Good writing" as such—the techniques of prose, dialogue, characterization, etc.—is not enough to do the job; there is also the matter of *structure*. It is one thing to move characters effectively in relation to each other, against a known background; something else again to have both characters and stage, so to speak, simultaneously in motion. (Some of the things that happen are happening *to* the environment.)

Most writers from other fields of literature tend to fall short in the initial application of logic to their imagined construct; the extrapolation is seldom as thorough as it should be. Those who manage a novel fulfilling the basic conditions, adequately planned and carefully thought through, tend to forget the *people* in the story.

Charles Einstein suffers somewhat from this last problem—but not so badly as to dull his story (nor as badly as many standard s-f writers). *The Day New York Went Dry*, in case you were wondering, is not a book about prohibition, but about water shortage. If there is less depth and conviction in most of the characterizations than one might wish for, that is not a condemnation of this kind of novel. The problem involved concerns millions of people. It might have been handled in terms of individuals; Mr. Einstein chose instead to use the great City itself as his real protagonist, and to work primarily in long-shots; the close-ups he does use seem designed to serve as brief magnifications of samplings of an overall statistical reality, rather

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than individual subjective revelations.

The significant thing is that he does achieve a feeling of reality, and a convincing picture of the emotional, as well as technical, problem of the city-at-large. Portraiture and mural-painting are different techniques. The mural here is effective as well as informative.

Sweeney's Island suffers from a similar lack of treatment-in-depth of its characters—but for the opposite reason. This is essentially a morality play, a study of human values in microcosm, with a cast of characters who seem sometimes to be wearing Greek masks, establishing themselves as prototypes, rather than stereotypes.

The book will inevitably, I expect, be compared to Golding's *Lord of the Flies*—and I also expect it is something like literary heresy to say I thought that one was *also* a good readable sci-fic morality play. It would be as valid to compare either one with *The Swiss Family Robinson*. All three are about a group of civilized people cast away on a deserted island. In *Sweeney*, as in *Swiss Family*, there are some artifacts of civilization to start off with; in *Flies*, as in *Sweeney*, the artifacts prove more durable than the mores.

The distinctive features of Christopher's book are: first, that he includes adult sexual morality in his field of study; and, secondly, that the conflicts here arise not so much from problems of primitive as from the surviving dangers of the lost civilization. The carefully (contrivedly?) ill-assorted community on the Island is undermined less by physical hardship than by the artifacts and attitudes left over from the macrocosm.

The Mind Benders, by James Kennaway, whose two previous novels have had no connection with science fantasy, is a startlingly sound piece of science fiction, as well as a good job of writing in any category. Both of the other novels are good reading, and both fall within the permissible range of balance of logic/imagination, poetry/philosophy, intellect/emotion, which constitutes "science fiction." This book achieves near-total balance, as a study in depth of the effects on one man, his wife, and his immediate associates, of an experiment in "reduction of sensation"—better known as "brainwashing technique."

It is not the usual policy of this column to review reprints of recent books; but this one escaped us when Atheneum published it in 1963, and I felt it deserved notice now that it is available in paperback. Don't let it escape you.

The distinctions I have been

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discussing between science fiction, science-fantasy, and "straight" fantasy, are significant once again in connection with the two volumes of short stories on hand. *The Worlds of Robert F. Young* comes labeled as "science fiction and fantasy." The jacket copy writer for *Short Friday* said simply, "Anything can happen," in a story by Singer, but references afterwards to ghosts and demons convey a sense of "pure," supernatural-type fantasy.

Mr. Young's most successful stories are for the most part his science fantasies: "The Girl Who Made Time Stop," "Hopsoil," "The Dandelion Girl," "The Stars Are Calling, Mr. Keats," and "Goddess in Granite." There are eleven others in this collection, all smoothly written, and most at least entertaining. In his introduction to the book, Avram Davidson says of Robert Young, "He writes with love." This is true—and almost so true as to be exclusive. The weakest stories are the satires; and in one or two of the others, the emotion seems closer to sentimentality than love. But when the stories are of noble feelings, high adventure, and romance, Mr. Young is at his best.

Mr. Singer has a wider range of emotions. He writes with anger, compassion, bitterness, tenderness, horror, delight, and amusement—to name a few. Not more than half of the stories in this collection are even clearly fantasy; some are crime, shock, horror, or what-have-you, but in most of these, there is an element of fantasizing *inside* the characters, that makes it difficult to draw a sharp line of division.

Both books, actually, are primarily fantasy collections; the oddity is not so much that those of Mr. Young's stories which concern themselves with space flight and future technology are not quite science fiction, as that Mr. Singer, in portraying a universe peopled with angels, demons, and witches, conveys such a feeling of method in his magic, and makes such expert use of the basic science fiction approach to the substance of superstition. (Please note: the Singer stories are *not* sci-fic, or even science-fantasy—with two or three exceptions—because he does not rationalize them with reality-as-we-know it. He simply succeeds in convincing us that our reality is perhaps less than conclusive.)

One small complaint about *Short Friday,* a technical one: most of these stories are set in Yiddish-speaking communities, and many characters have Hebrew or Yiddish names; I wish the several different translators had not agreed to make use of the conventional transliterations, which are usually misleading to English-speaking readers. (The letter *J* is used for the sound Y; etc.)

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Two fantasy novels on hand are worthy of mention—or I should say one novel of fantasy, and one just across that borderline which Mr. Singer keeps recrossing, into the realm of the internal fantasy of the psychological novel. The first is Robert Nathan's *The Fair*, an altogether charming, light narrative of the young damosel Penrhyd's flight from the Saxon hordes in the days of King Arthur, and her encounters with wyverns and unicorns, Ethiopians, Saxons, Romans, a Druidess, and her own personal Guardian Angel.

The other book is William Golding's *The Spire*, a compelling, if not convincing, subjective account of the obsession of a man driven by his fantasies to truly supernatural endeavor.

The final item on this month's list has the science fictiony title, *The Ambidextrous Universe*. (By Poul Anderson or A. E. Van Vogt, one wonders?) Actually, the book is an exceptionally lucid explanation of as complex a concept as modern physics has to offer: the problem of "parity," which concerns the odd- or even-ness, right- or left-handedness, of the universe.

Mr. Gardner's supreme faith in rationalism irritated me here and there in this book, as it has in his previous works. The same trait contributes greatly to his lucidity in certain areas. His chapter on optics, geometry, and molecular structure, are superb. His discussions of biology, the arts, and what he calls "the Ozma problem," suffer, I feel, from some lack of imaginative scope.

But then again, it *is* a basic—I mean Basic Book, of explanation rather than speculation.

—JUDITH MERRIL

THE NINTH ANNUAL OF THE YEAR'S BEST SF, Edited by **Judith Merril**, Simon & Schuster, $4.95.

To any reader of this magazine, the name of Judith Merril is a guarantee of the quality of the anthology. One is always astonished at the breadth of the seas into which she casts her nets, and this year more than ever; her sources range from *The Magazine of Fantasy and Science Fiction* (which is strongly represented) to the *Paris Review*; from *Galaxy* to the *Phoenix Nest* in the *Saturday Review; from The Atlantic Monthly* to *The Worm Runners' Digest*. Worm Runners, you ignoramus, are scientists who run worms through mazes; and if they want to construct a composite of a snail, a starfish, and an amoeba, and if J. F. Bone wants to construct for him a society with its problems, so much the better for everybody, except perhaps the original snails, starfish, and amoebae who formed the eggs for

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this omelette. Miss Merril's forms are equally varied. Most of her material consists of short stories, but there are also a monologue in free verse, *The Jazz Machine*, by Richard Matheson, about the lynching of a Negro jazz-player. There is a factual article, Ben Bova's *Where Is Everybody?*, an extremely interesting treatment of the question as to why (granted the presently accepted theory of millions of inhabited worlds, some with civilizations presumably higher than our own) have no visitors from outer space reached earth. There are SF cartoons, by John Gallagher and Mort Gerberg, and one of Jules Feiffer's story-cartoons, on a werewolf theme, which frightened me considerably—and I thought I was well hardened to werewolves.

Reviewing an anthology is always difficult, because it is impossible to treat all the contents with the fullness they deserve; but having mentioned so many, I must also mention a few of the others that particularly impressed me. I liked *Hot Planet*, one of Hal Clement's always reliable and readable factual reconstructions of the conditions of another planet about which something is known, in this case Mercury. I liked a whole group: W. J. J. Gordon's *The Nobel Prize Winners*, Mort Gerberg's *IBM*, and Cliff Owsley's *Confessions of the First Number*, all dealing in various ways with our growing loss of individuality. I liked William Tenn's *Bernie the Faust* and Gerald Kersh's *A Bargain with Cashel*, two very different tongue-in-cheek stories of crooked deals.

There were others that I liked, and a few that I didn't, but that will have to do, for I must come back to the anthology as a whole. Miss Merril's comments are always penetrating, but this year she has surpassed herself. I particularly commend to you her reflections on the probable emotional consequences—to her, and to me, the appalling consequences—of actual physical immortality on earth, as has been recently promised us. Moreover, this year her comments are neither introductions nor tailpieces, but both; they "look before and after", as the Greeks said, relating each story to the one that follows. Her theme is alienness, but as she demonstrates, alienness can be of many kinds, from that of the werewolf to that of the superman. The essay I have mentioned, *Where Is Everybody?* suggests that our visitors prefer to observe us, themselves unobserved; from this, Miss Merril goes on to how many types of alien observation there can be. She ends with stories of the development of superhuman powers. *Drunkboat*, by Cordwainer Smith, hopefully maintains that a sufficient capacity for both rage and love will endow a man with pow-

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ers far beyond those of the comic-strip Superman. With regard to psychic powers, I can believe almost as many impossibilities as the White Queen, but that, I am bound to say, I regard as pure fantasy. And so much the better. Anthony Boucher once said to me, "What SF fans really like is fantasy, but they don't like it called that." I commend this to all fans, no matter what they think they like their reading called.

—BASIL DAVENPORT

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TP Caravan's last story here (THE COURT OF TARTARY, Dec. 1963) concerned a Johnsonian scholar victimized by an illiterate stock-yard slaughterer. His newest is a time-travel story, and if there is a lesson to be found in its wry humor, it is perhaps that the high-school dropout may yet inherit the earth.

BLIND DATE

by TP Caravan

"THIS IS A GREAT MOMENT FOR science."

"Sure," said the young man. "My girl says she's proud of me."

"And well she may be. Harry Congreve is a name that will be famous for thousands of years."

"That's my name. That's me."

"Are you ready?"

"Sure." He strapped himself in. "Her name's Honey Lou. Wait till I tell her I'm going to be famous. Wow! She's real sweet when she wants to be. Usually she says I'm a creep."

"Never mind that now," said the old man. "Don't forget to take notes and keep your tape recorder going."

"She's from the south. You-all, she says."

"Can't you forget your girl for a minute? I have some final instructions for you."

"Forget Honey Lou, professor? My little old Honey Lou that's going to be so proud of me? I got her picture right here to take into the future. That's her hiding behind the magnolia bush."

"Now listen," said the professor. "Please listen. This is important. We don't know how far ahead in time you'll be going. Maybe the people will be so advanced they won't speak English. In that case I want you to draw diagrams for them. Show them you're intelligent. Mathematics: triangles and tentacles and that sort of rubbish. Yes! Show them how the square of the sum of something is equal to each other."

"Jeez, professor, I'm not a mathematician. I'm an anthropologist, sort of. I mean I would be if I hadn't flunked out."

"Draw culture patterns then. What do I care? Just let them know you can reason."

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"OK. I wish I could take my Honey Lou with me."

"On the other hand, they may have reverted to savagery. Here's a bag of beads: give them presents. Here's a deck of cards: do tricks for them. Maybe they'll think you're a god."

"Me? Wow!"

"They may be hostile. Here's a gun."

"Hey! I don't know if I . . ."

"The important thing is to fit in with them. Learn all you can; learn everything. That's important. I wish I could go myself instead of sending a rattlebrained lab assistant."

He began to unstrap himself. "I don't mind. If you really. . ."

The old man's big hand shoved him back into the seat. "No, my boy. I must stay behind to find out what went wrong if you don't get back alive. Quickly now! The condensers are charging. Prepare yourself. Here's a ham sandwich. Here's a knife. Here's a flashlight. Yes! Remember, we can't tell how they'll be dressed. Get into the kind of costume they're wearing as quick as you can; you'll be too conspicuous if you stay in these clothes."

"How?"

"How what, my boy?"

"How am I suppose to get their kind of clothing?"

"Here's a blackjack."

"I wish I'd talked this over more with Honey Lou."

"You've got to remember this. Get back to the machine in half an hour. It's most important. We've got to retrieve it then. If you aren't in it you'll be stranded in the future and you'll never see your girl friend again."

"Hey!"

"I didn't tell you before because I didn't want to worry you. It's all right. Nothing to be nervous about. Try to bring some artifact back with you, something for science. Yes! An article from the future. What a wonderful thing this is, what a wonderful day. I hope you find some inspirational thought to carry with you. Farewell, my boy. Keep your tape recorder going."

"Honey Lou!"

Lightning flashed; thunder rumbled; the professor jumped; the time machine disappeared.

It seemed to Harry that he was noplace. Frightened, he sat strapped in the small chair, clutching the bright clinking beads and the gun in one trembling hand. He didn't know how long he was noplace, but suddenly he was someplace.

Lots of people surrounded him. Voices babbled. Bright lights. Dizzy and confused, he stepped out of the machine, letting the straps fall to the floor behind him. It was all going wrong. No chance to change clothes: everybody had seen him materialize. All wrong. Time travel makes you sick at your stomach: that was the first discov-

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ery. The vast room whirled around him. Look out for the savages. He held the beads over his head.

"Pretty beads," he said. "Me friend. Me come from the past. Many suns, many moons ago. See the pretty beads. Maybe me God." He shook the beads and the gun went off.

Somebody squealed and somebody said, "Your accent's all wrong, old man," and somebody kissed him (Oh, Honey Lou, Honey Lou), and somebody grabbed the beads and shouted: "Genuine Woolworth! How clever of you."

He was in a large room, and the room was full of people. Something was wrong somewhere: everybody was dressed in ordinary clothing. "I'm from the past," he shouted. "Look." he held up the slate. What should he do with it? He drew a triangle. "See? From the past."

He rocked back under a wave of applause. The girl kissed him again. "Wonderful!" she cried. "Is that a real flashlight?" He handed it to her and she squealed with delight. "I'll bet you win the coffeepot," she said.

He felt sicker.

"What year is this?" he asked. "How far have I come?"

"Isn't he wonderful?" asked the girl. She giggled. "You be Holy Harry Congreve and I'll be Holy Honey Lou."

"Everybody listen," he shouted. "Please! How do you know my name? Tell me what year this is."

"He's marvelous," they shouted. "Give him the coffeepot." They joined hands and danced around him.

"Honey Lou!" He sat down on the floor and began to blubber.

"What's the matter with him?"

"He's drunk."

"Good for him. So am I."

"Wasn't it the eighteenth century when everybody got drunk?"

"Don't be picayune."

"I thought Syor Alexander was going to get the coffeepot, but he doesn't have a chance now. Did you see how well this chap worked his materialization?"

"Where's Syor Alexander?"

"That's him over there in the grey business suit with the New York Times under his arm."

"Let's all get drunk."

"Sure."

They picked Harry up and lay him on a couch.

"Stay here, old man," they said. "You're liable to get trampled when the dancing starts. Can you rhumba?"

He raised himself weakly on one arm. "Do they really rhumba in the future?"

They laughed. "You're perfect," they said. "Perfect."

The girl who had kissed him rushed back. "He's even got a tape recorder going," she squealed. "Isn't he wonderful? He's the best Holy Harry Congreve I ever saw."

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She shook a finger at him. "Now you just lie there and get drunk. Don't say another word. You might spoil it. I'll have drinks sent over to you. Oh, you should hear Syor Alexander raving! He thought the coffeepot was his for sure this time."

Harry lay back and let the world whirl around him. It was all wrong, all wrong. Was this the future? Arthur Godfrey leered at him from a television set in one corner; a tattered Sears Roebuck catalogue lay in the magazine rack; everybody was dressed the way people always dressed. Somebody was playing a joke on him, something had gone wrong. The professor would be awful sore. Jeez. Honey Lou wouldn't even speak to him. He grabbed a drink. He grabbed another. And another. Honey Lou, Honey Lou. All wrong. Down the hatch. Girl said she'd be Honey Lou but she wasn't Honey Lou. Funny way they talked. Funny accents. He grabbed a bottle from somebody's hand. No future at all. Still inna present. Hey! He was supposed to bop somebody with his blackjack, take their clothes. He lunged to his feet, wavering soggily.

"Hurray," somebody yelled. "Here's the winner," and handed him a coffeepot.

"Hurray," he answered. "Buncha drunks, rotten ol' ordinary drunks." He swung out with his left hand and tapped somebody over the head with the ham sandwich that had inexplicably come out of his pocket. Clutching the coffeepot, he fell back into the time machine and sat there while somebody made a speech and somebody applauded and somebody kissed him.

Lightning flashed, thunder rumbled, the professor jumped, the time machine reappeared in the laboratory. Harry made his second discovery: time travel sobers you up.

"Well," said the professor. "What have I wrought?"

"Huh?"

"Never mind, my boy. Tell me all about it. What's that in your hand?"

He flung back the straps. "You fixed me up good with my little Honey Lou. You and your big experiment! What's she going to say when I tell her I didn't go into the future at all? She'll say I'm a creep again."

The professor stared at him.

"What do you mean by saying you didn't go into the future? Of course you went into the future! My reputation depends on it. Now wipe that lipstick off your face and tell me what happened."

"Nothing happened. I ended up at a party, that's all. Some party somewhere. It wasn't anywheres near the future. They gave me that coffeepot because I won it somehow."

"Won it?" the old man looked

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carefully down on the coffeepot. The veins stood out on his forehead. "This is just an ordinary piece of junk." He rushed to the time machine. "Let's see what the tape recorder says. You may be crazy but it . . ."

"Squawk!" said the tape recorder. "Pretty beads. Me friend. Me come from the past. Many suns, many moons ago. See the pretty beads. Maybe me God Bang!"

"That's when the gun went off," Harry said. "Have I still got lipstick on my face?" Going to a microscope, he tried to see himself in the small mirror. "Honey Lou wouldn't like it if I came back with lipstick on me. Can I have a handkerchief?" He groped in his pockets.

"Do they really rhumba in the future?" asked the tape recorder.

"It won't come off," muttered Harry. He scrubbed furiously.

"Buncha drunks," yelled the recorder, "rotten ol' drunks." There was a dull thud. "Passed out," said a voice from the loudspeaker. "Wonderful," said another voice. "I never saw a Harry Congreve like him. Did you see how well he did the incredulity? Magnificent! Lord, was Alexander furious. He's been practicing ever since last Harryday, but this chap left him several parsecs in the rear."

"Do you think acid might take it off my nose?" Harry asked.

"Quiet!" shouted the tape recorder. "Here's our hostess." The rumpus died down to a low babble. "Ladies and gentlemen," said a new voice, "it is an honor and a privilege to award this rare old coffeepot to this unconscious young man who has so splendidly come among us. Never have I seen so fine a Holy Harry Congreve, and I have seen many a fine one. I . . ." The machine started to curse bitterly. "Throw him out," it shouted. Brief noises of battle sounded. The hostess' voice returned. "I am sure we will all pardon our dear Syor Alexander," she said. "He, too, has gone to much trouble to give us a Harry Congreve for this Harryday, but this other young man, with his ingenious materialization and his genuine relics, has far surpassed anything I have ever seen." There was a brief flutter of applause.

"The Harry Congreve Society has met once a decade for the last six hundred and eighty years to commemorate the tragic experiment in which this young man disappeared into the mists of time, and to perpetuate his memory by recreating his era as best we can. Harry Congreve went heroically into the future where he never arrived, but we, who are the future, have given him what small honor it is in our power to bestow."

Harry bent to the small mirror, scrubbing furiously at the lipstick on his face. "Honey Lou, Honey Lou," he sobbed.

The professor's big hands were

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slowly denting the coffeepot as he listened to the squeaking voice.

"Harry Congreve failed, but it was not *his* failure. No! Rather it was the failure of the detestable scientist whose name has been stricken from all our records, this poor deluded ignorant man who sent our heroic and noble patron forward into nothingness."

The coffeepot broke in half.

"Holy Harry Congreve failed, but his name goes marching on, and with it goes the proud name of Holy Honey Lou.

"And so it is with pride and delight that I award this coffeepot to the finest Holy Harry Congreve any of us have ever seen. Don't wake him up. Let him sleep it off." The tape squawked and stopped.

"What's up?" Harry asked. "I thought I heard somebody say something about my Honey Lou. Don't you feel well, professor?"

The old man's voice was calm. "When you got there, they thought you were impersonating yourself. They thought I failed."

"Who else could I be but me?"

"They thought I sent you into the future where you never arrived."

"Huh?"

"And you arrived at a ceremony commemorating your nonarrival."

"Got to get this lipstick off."

"No doubt the future is full of those wretched ceremonies. All praising you. All cursing me. A new religion. So when you landed in the future you were attracted to one of the ceremonies. An interesting phenomenon: time travelers are pulled toward certain events. I'll call it temporal induction. Yes! I'll prepare a paper . . ." He broke off.

"I can't announced my results," he said. "I don't have any. Deluded and ignorant, they called me."

"They better not go calling my Honey Lou names."

"Sit down, son. You must be tired."

"Hey! I don't want to sit in the time machine again. Hey!"

"One chance to clear my name. There's still a charge on the condensers."

"Hey! Look out! That's the switch that . . ."

Bang! Went the time machine, disappearing. The professor jumped; the power supply melted into a pool of molten metal.

Harry was noplace. Then he was someplace. He was sick.

The sun was large and red, and the sunlight was dim. You could see the stars through it. There was something wrong with the way they looked. A cold wind blew across the ancient rocks.

Little people with large heads danced around him.

"Yop!" One of them cried. "I bet you win old here coffeepot. You most best Holy Harry Congreve ever we seed, and I be play your Honey Lou."

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THE ICE AGES

by Theodore L. Thomas

THE DEEP-SEA BOTTOM HAS now supplied the means for identifying the Pleistocene epoch when the great glaciers moved down over the land. The invention of the piston coring tube made it possible to take from the bottom a cylindrical sample almost 50 feet long. Examination of the sample showed changes in the shells of the one-celled marine protozoa known as foraminifera. The changes were apparently due to climatic changes in the oceans, so the shells could be used to estimate the climate in existence over the ocean at the time each animal lived. Here was a fine way to date the major ice ages.

Before starting, though, it was necessary to find out how fast the sediments on the deep-sea bottom were laid down. Only by knowing the deposition rate was it possible to tell how long ago a particular segment of the core was deposited. Radiocarbon dating did the trick. The shells of the foraminifera contained calcium carbonate, so the chemists could determine the age of the carbon in the carbonate radical. Radiocarbon dating is good only for specimens no older than 35,000 years, but 35,000 years probably tells the whole story. There are variations in deposition rates, but the average rate of accumulation of bottom sediment turns out to be about one inch per 1,000 years.

Study of the core samples soon produced results. As the scientists went down the core, the spacing of the warm-water and cold-water organisms in the core made it possible to graph the climatic changes the oceans had gone through. There were four major ice ages and three interglacial periods in the last 1,500,000 years, all nicely indicated by the organisms.

For the future, it seems desirable right now to do a little research on existing species of foraminifera. Most of them are rapidly evolving species, which is why they have been useful in the past as index fossils. Deliberate mutations could easily be produced. We need a species—call it an indicator organism—that will tell us water temperature at a glance, maybe by having one shell coil for every five degrees of temperature above freezing. We could go further. Coil width could show nutrient content of the oceans. Shell thickness could indicate salinity, and so on. With such a true-breeding species in the oceans, all we'd have to do is haul up a seinfull, take a look at the tiny shell, and jot down all the data.

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Roderic C. Hodgins writes: "I am 31, and work as a psychological counselor at Harvard. My past jobs (the usual writer's odd lot) include messenger boy, assistant director on a movie crew (the old March of Time newsreel), science reporter (LIFE), writer-engineer for the technical manuals of an army computing machine, and teacher of speed reading and English composition at Harvard. I have an A.B. in math from Harvard, and my most recent piece of writing is a teaching-machine program on symbolic logic." There is a symbolic logic of another sort in Mr. Hodgins first story for us—in which he offers a fresh and compelling view of a classic fantasy theme.

THE HISTORY OF DOCTOR FROST

by Roderic C. Hodgins

CONSIDER A ROOM. CONSIDER that room packed, crammed, stuffed with papers and books until the floor sags downward under the load. Think of that room in a house on a late October night. There was only one light in the room, shining out the window on the road leading to the house. The road was empty.

Consider the world at an hour before moonrise, with only a few stars showing like peppergrains between the clouds which slid across the sky. The first killing frost of autumn had come, and the night held no insect sounds. The earth was cold enough to crunch like cinders under the heel of a shoe, and over it everywhere was a layer of dry brown leaves, ready to be crushed into powder underfoot. Usually from the room a few lights could be seen across the valley, but there were none tonight. The house hung suspended like a fish on a line, in the center of a tremendous darkness.

Dr. Johannes Frost sat at his desk in the middle of the room. Before him, on a sheet of the expensive white paper he preferred,

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were six equations in the notation of the tensor calculus. They represented eight years work, and three drawers of the green filing cabinet behind him held the elaborate calculations which had served as justification for the symbols on that one white page.

For the third time that day Dr. Frost approached the fifth equation. He paused, and shrugged his shoulders to ease a painful tension in the muscles of the back of his neck. He was cramped and tired from three weeks work at his desk, pausing only for meals and a walk or two. He had lived, during those weeks, in that high land where human lungs were never meant to breathe, and where the mind, merely to move about, was forced to assume a discipline more rigorous than that of a ballet dancer or a concert pianist.

The work was a little, Dr. Frost reflected, like a game he had played as a child. Once he had saved his pennies for a year, and had tried to make a tower of the coins. It could be built higher and higher until the point when the last penny caused the collapse of the whole structure, leaving nothing to do but start again from the beginning. Or a little like trying to fill a cup with water so that the meniscus rose above the edge of the vessel. Finally, no matter how carefully the last drop was added, the cup overflowed.

Dr. Frost began work on the fifth equation again. For an hour he sat nearly motionless in his chair, his right hand moving from time to time on a second sheet of paper he used for preliminary calculations. As he approached the heart of the problem even that hand was stilled, and he sat utterly frozen, hardly breathing, paralyzed by thought so intricate it approached mysticism.

Then his thoughts collapsed. The bright coins of confusion jingled down, the cup overflowed, the train of ideas was lost. Dr. Frost sat staring at the paper before him with a gaze of hatred and despair.

As he sat looking at the papers, he became aware that a shadow in the deep black chair across the room was taking on form and color. For a small part of a second, enough to count to three rapidly, he sat quite still, wondering if the lamp had formed some after-image on his retina. The strangeness of the shadow persisted. He looked up.

"Who are you?" he asked. There was no answer. The face of the figure on the chair was poorly lit, but even so Dr. Frost thought that he could see a peculiar expression. "Who are you?" he asked again.

The figure stirred. "You should know better than to ask that question," it said. "You were just thinking of me." The hand of the figure moved slightly on the arm of the chair. Even in the poor light it

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could be seen that the fingernails were gray, the color of slate in a schoolroom.

"I never saw you before in my life," said Dr. Frost.

The figure raised its hand slowly to its face and squeezed its cheeks with long tapering fingers. The cheeks gave under the fingers, like putty, or a child's rubber mask. Then the arm began to straighten, and the face came away from the head. Dr. Frost looked at what was behind the mask, and then was violently sick in the dark green wastebasket beside his desk. It was over in a moment. When he looked up again the figure was as it had been before.

"My name," said the figure, "is Azuriel. You have never heard of me, but I figure slightly in your mythology. I am mentioned twice in the Book of Revelations and more frequently in certain of the Apocrypha. The name is Hebrew, of course. Its meaning is quite unflattering, if one traces the word roots back far enough. That is understandable enough. I apologise for the effect which my appearance produced. Our kind is not pretty to your kind."

"What do you want?" asked Dr. Frost.

"An agreement," said the figure. "There is no need to worry. I can see precisely what is in your mind, and I find it remarkable that a man of your abilities should carry such a freight of nonsense. I am afraid I must start from the beginning.

"In the first place, I ask you to suspend judgment on my motives until I have finished telling you precisely what is on my mind. Secondly, I am not *the* devil, I am *a* devil. I would prefer that you abandon that word entirely, if possible, and think of me as Azuriel, an individual like yourself."

The figure shifted slightly in its chair, producing the faint hissing sound of cloth on leather. A piece of paper slid across Dr. Frost's desk. Dr. Frost picked it up, and unfolded it. "To prove:" it began, "That every even number is the sum of two prime numbers. . . ."

Dr. Frost looked up at the figure opposite him. "Really?" he asked.

"The solution is complete on that page." said Azuriel. "I have several others here." He patted a plain black leather briefcase.

At the top of the page, in his own hand, was his name: "Johannes Frost."

"This is not my work," said Dr. Frost. "Do you mean that I. . . ."

"I am well aware of your professional ethics," said Azuriel, "and also of the fact that you could find no satisfaction in plagiarism or forgery, even were it undetectable. Or at any rate, you believe that so strongly that I would be forced to use valuable time to convince you of the contrary. But this is not my work, I

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assure you. It is yours, or rather, will be, provided you do not have an accident six months hence."

"Do you mean," asked Dr. Frost, "that you will kill me if I do not do whatever it is you want me to do?"

Azuriel shook his head. "That is one thing which I may not do," he said. "Or at least, not directly. You are vulnerable to me because I have information which will save your life six months from now. But aside from that I cannot do anything to influence your actions directly or to affect you physically. This is inherent in my nature."

"What is your nature?" asked Dr. Frost.

"I can only explain by analogy," said Azuriel. "I am composed of what you would call information, in a very broad sense of the word, but information without a physical carrier. The information you are familiar with is transmitted by the ink on the pages of a book, an electrical pulse in a wire, or a smile on the flesh of a friend. All these forms of information are transmitted by physical objects. The information of which I am composed has no carrier whatever, unless you count certain cells in your brain which register my presence."

"You aren't real then," said Dr. Frost.

For the first time, Azuriel seemed to smile. "I am a demon," he said, "not a metaphysician. I will confess this much: I can no more be damaged with Martin Luther's inkwell than the air can be wounded with a knife. I can neither affect, nor be affected by, any physical object."

"How can I perceive you, then?" asked Dr. Frost.

This time Azuriel grinned. "Do you?" he asked.

There was silence in the room for several minutes. Dr. Frost looked at the paper in his hand. After a time, he said, "What do you want from me?" without looking up.

"I do not want anything *from* you at all," said Azuriel. "I want your *self*, in the same way that you want a lettuce leaf, or a lamb chop. Your aims are in the universe of information, but you must eat the tissues of dead plants and animals to survive. My aims are on the next plane higher, and I must have crude information to pursue them.

"You are a remarkably intelligent man. You contain a great deal of information. I am willing to place you under cultivation, to rid you of pests, to satisfy your wishes, as you would satisfy a steer's wishes, and to feed you fat with experience. Then, when your natural lifespan is up, I will absorb you into myself, with your consciousness and thinking powers intact. You will be a part of me then, in the same sense that your food becomes part of you. I offer

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you a lifetime of wishes fulfilled, plus a share in my own immortality."

"You want my soul," said Dr. Frost.

"How quaint," said Azuriel. "No. That is precisely the part of you which I do *not* want. I am surprised that you would use such a semantically sloppy term, Doctor, but since you have, you must see that what you call a 'soul' is the part of you which determines the use to which you will put your knowledge, your information. That part of you would conflict with *my* wishes and objectives."

"What will you do with my soul?" asked Dr. Frost.

"Discard it," said Azuriel, simply.

"And what becomes of it then?" asked Dr. Frost.

"It vanishes," said Azuriel. "If your brain is the carrier for the information in your mind, your mind is the carrier for the stuff which forms your soul. What happens to the information in a book when the book is burned? But why should this concern you? Half an hour ago you would not have admitted that you had a soul. Would you exchange what I have just offered you for something whose existence you doubted so recently?"

"I don't know about. . . ."

"As a matter of fact," said Azuriel, "to what extent do you own your 'soul' right now? Perhaps you will think it rude of me to suggest it, but was the decision to work on fusion experiments entirely your own? Was it your soul which prompted you to join the weapons project, or was it something else? Disinterested scientific curiosity? The judgements of your fellow scientists? Patriotism? The simple fact that research money was to be found there and nowhere else in such quantity? Are any of these your 'soul'? Your work is the largest part of your life. If decisions *there* are made by forces external to you, why should you worry about losing your soul? Don't be a hypocrite, Doctor. Some men want money. Others want women. What you want is in this briefcase, or rather, in your own head. I offer you the time to get it and eternity to exploit it. I will return in precisely twenty-four hours for your decision."

As Dr. Frost looked at Azuriel, the figure in the chair blurred, faded, lost color and outline, until nothing was left but a shadow in a black leather armchair, and the white wilderness of papers in front of him, covered with calculations in his own hand.

For a long time after the chair was empty, Dr. Frost sat looking at the shadows. It was more than an hour until the shaking stopped. Then he left his office, taking care to avoid the chair Azuriel had occupied. There were three people whom he wanted to see: a young

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Jesuit, Father Paul, a psychiatrist, Dr. Eckmann, and a friend, Jean Connor.

The priest's telephone was the first to answer. He was cordial, and invited Dr. Frost to come to see him immediately.

Dr. Frost had known Father Paul for some time. They first met at a cocktail party at the University. Dr. Frost's upbringing, in a small and strictly protestant town, had left him with a mild sense of surprise at the sight of a man in a clerical collar with a drink in his hand, and he had joined the group of students around the priest with considerable interest. The conversation involved one of the very few novels Dr. Frost had read since his undergraduate days, and he joined in the discussion.

Later, when the party ended, Dr. Frost offered to drive the priest home, and their conversation in the car led to a luncheon at the Faculty Club. The lunch had been pleasant, and revealed to Dr. Frost that the priest was a symbolic logician of no small ability, although not quite of professional grade. Dr. Frost had left the lunch convinced that while the Catholic Church might be a lot of nonsense (he knew nothing of the matter personally, and didn't care), nevertheless Father Paul was a good talker and no fool.

They lunched together regularly after that, sometimes at Dr. Frost's table in the Faculty Club, sometimes at Father Paul's favorite restaurant in town. For some reason or other, Dr. Frost usually did the talking. Father Paul displayed a keen interest in mathematics and physics, and when Dr. Frost was sure that it was not the priest's intention to preach sermons to him, he found the younger man's interest rather flattering.

"Come in, John," said Father Paul when Dr. Frost arrived at his apartment. "You sounded worried over the telephone." He was dressed in a sweatshirt, an old pair of gray pants, and loafers. "I'm afraid you caught me a little off guard, but any time. . . ." Then he saw Dr. Frost's face. He whistled softly. "You *have* got troubles," he said. "Come in, sit down, let me get you a drink."

A few minutes later Dr. Frost was sitting in a large armchair, next to a fireplace. Father Paul sat opposite him.

"Does the name 'Azuriel' mean anything to you?" asked Dr. Frost. Father Paul's eyebrows shot up. Then he rose, walked to a bookcase and pulled down a large brown volume.

"A devil," he said. "The name comes from a Hebrew word meaning 'liar.' Why are you interested in this?"

"I've seen him," said Dr. Frost.

Father Paul looked very intently at Dr. Frost for a moment. He seemed about to speak, but changed his mind and sat down

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suddenly in his chair, holding the book open across his knees. "Tell me about it," he said.

When Dr. Frost had finished his story there was silence in the room for several minutes. "You must think I'm insane," he said.

"No," said Father Paul. "I'm one of about six men in town who would believe you. I know you too well to think you're insane. I never met a saner man in my life. You aren't the sort given to practical jokes, and you would have had to do a lot of research to find out as much about Azuriel as you have told me. No, I believe you completely. You saw what you thought you saw."

"We've never talked about religious matters before," said Dr. Frost. "What do you think I should do?"

Father Paul drew out his rosary. "Hold this," he said, extending the small silver crucifix at the end of the chain. Dr. Frost took the cross in his right hand. "Good," said Father Paul. "The fact that you can touch it indicates that you are not possessed, at any rate. Wait here." Father Paul went to his bedroom and returned with a bottle of water and a small black book. He took a phylactery from between its pages, kissed it, and put it over the back of his neck. Then he poured a little water into the palm of his left hand, dipped the fingers of his right hand into it, and touched them to Dr. Frost's forehead. He traced the sign of the cross in the air over Dr. Frost's head, and said *"Ego te baptiso in nomine Patris, et Filii, et Spiritus Sanctus."* The singsong of the Latin words sounded strange in the quite of the apartment. Then, opening the book, he began to read the formula of exorcism: *"Exorciso te, immundissime spiritus, emnis incursio adversarii, omne phantasma, omnis legio, in nomine Domine Nostri Jesus Christi; eradicare et effugare ab hoc plasmate Dei."* The words rolled on for several minutes. Finally Father Paul stopped. "Say 'Amen' " he said to Dr. Frost.

"Amen." Father Paul signed and sat down. "Well," he said smiling, "That's that." He removed his phylactery, kissed it, and put it beside him on the chair.

"What did all that mean?" asked Dr. Frost.

"The first was the ceremony of Baptism," said Father Paul. "It usually takes a bit longer than that, but the Church permits the shorter version to persons in mortal danger. The next was exorcism. The third was a general confession and act of contrition. Then I said 'Whatever the Church believes, I believe.', and you said 'Amen' to that. I don't believe you are in any immediate danger now, but I *would* go to mass every morning, if I were you, for quite a while."

"Go to mass?" said Dr. Frost, puzzled.

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"Certainly," said Father Paul, smiling. "You want to be a good Catholic now, don't you?"

"But I'm not a Catholic at all!"

"But you are," said Father Paul. "Did you think it would take a brass band? There are a number of other things which should be done, but there's no great hurry. Come back to see me when you feel a little better. Tomorrow, perhaps. I'll give you the necessary instruction."

"But I never agreed to be a Catholic," said Dr. Frost. "What are you trying to tell me?"

Father Paul's expression changed from satisfaction to astonishment. "What did you come to see me for, then?" he asked.

"Why, you're a friend of mine. I hoped you could give me some advice. I thought maybe if you believed me you could do something about all this."

"You don't have the idea at all," said Father Paul. "I can't do anything. I'm only an intermediary. Only God can help you, and even *he* can do nothing unless you accept him willingly. Did you think what I said was magic? That I was pronouncing some sort of hocus-pocus over you which would set things right? The only thing I could do was to formalize your assent to God's will, which now you tell me did not exist, even after I had tried for so long!"

"What do you mean by that?" asked Dr. Frost.

"Why, I'm a priest." said Father Paul. "Ever since I met you I have been praying for your conversion. The Church needs more men like you, especially in her temporal affairs. And you need the Church, as this incident has shown so clearly. I had hoped to see you converted in four or five years time, with God's help."

"But I thought you were my *friend*," said Dr. Frost.

"So I am, John, so I am, but my spiritual duty comes first. And what is an attempt to save your soul but an act of friendship? You talk as though I was trying to do something to hurt you. I confess I was forced to dissemble a little, and I apologise for that. But ask yourself what you would have said if I'd approached you directly." Father Paul plucked once, at the neck of his sweatshirt.

"So I took the long route. I tried to gain your respect and confidence with the little mathematics I know, hoping to break down your distorted image of the Church."

"But I don't have any image . . ."

"Of course you do," said Father Paul. "You may not realize it, but it's there. Have any of your fellow-physicists ever told you that Catholicism is anti-intellectual? All right. A man like you could hardly help possessing anti-Catholic attitudes in the atmosphere of this university. Anti-Catholicism is the anti-semitism of the intellectual,

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John. I had to try to put you in a receptive mood before I could appeal to you directly."

"I see," said Dr. Frost. "And if I go along with you and join the Church I will be *bound* to believe everything the Church believes, under threat of damnation? That's the way it works, isn't it?"

"The way you speak proves my point about your prejudices," said Father Paul. "Your ideas are . . ."

"Isn't it true that I would have to believe the Pope to be infallible?" asked Dr. Frost.

"Only when speaking *ex cathedra* on matters of faith and morals," said Father Paul.

"What else do you people talk about?" said Dr. Frost. "Look, forgive me for speaking bluntly, but you want the same things Azuriel wanted, and *he* at least laid his cards on the table. You want my brain for your 'temporal affairs', but *you* are going to determine what gets done with it."

"I'm sorry, John," said Father Paul. "If you feel that way, the failure has been mine. I must warn you that if you leave here now you will go in mortal sin, and your danger would have existed even if Azuriel had never appeared. Your sin is the sin of pride. Like all too many scientists you hope to understand the universe through intellect alone. I tell you that you will find the task impossible. Faith is necessary. You must learn that the sort of freedom you want is an illusion. Perfect freedom is the freedom to obey the will of God."

I'm sorry, Father," said Dr. Frost. "I have no time." As he left the apartment he heard the voice of Father Paul behind him echoing in the corridor. "Remember pride," it said, "Remember pride."

The corridor was too dark for Dr. Frost to see the indecision on Father Paul's face as he turned to telephone the bishop, and by the time the Jesuit was explaining to his superior why such drastic action had been taken without authorization, Dr. Frost was too distant to hear anything at all.

Dr. Frost went next to the apartment of Dr. Echmann. He was an older man, growing stout from sitting still all day, listening to the desperate and the frightened. Dr. Frost had met him when one of his graduate students had a nervous breakdown two weeks before his oral examinations were due. The boy had withdrawn from the world completely, even to the extent that his muscles had been affected. If one of his arms were lifted above his head it would remain there for hours like a branch of a tree. The boy had collapsed while in Dr. Frost's laboratory, and Dr. Frost had been impressed by the gentleness and competence with which Dr. Eckmann had taken charge of the situation.

"I see," said Dr. Eckmann when Dr. Frost had finished. "Wait here a minute." He returned in a mo-

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ment with a glass of water and three small red capsules.

"What are these?" asked Dr. Frost.

"They'll make you feel better," said Dr. Eckmann. "You seem badly upset, and I think they will do you good."

"Don't mince words with me." said Dr. Frost. "What the hell is in these pills? Either you tell me right now or I leave."

"Please don't be disturbed," said Dr. Eckmann. "Certainly I'll tell you. This is seconal—a sleeping pill. Surely you aren't concerned about those drugs, Doctor? I remember reading a paper of yours comparing their effect on the brain to certain types of shunts in switching networks."

"Don't try to sidetrack *me,* either. What do you expect me to do with a sedative? I'm not a medical man, but I know enough to see that those pills are a knockout dose."

Dr. Eckmann had been practicing for a long time. He considered for a moment and then put the water and the pills down within easy reach of Dr. Frost's hand.

"Buy a little time," he said. "You are obviously very upset. I am sure that there is nothing the matter with you which I or some other doctor cannot cure, given time. But I can do nothing for you while you are in this state. I am sure you will realize that that is reasonable. Psychiatry takes time."

"You think I am insane then?" asked Dr. Frost.

"The word is not used in modern medicine," said Dr. Eckmann. "I have no idea yet what may be the matter with you, but unless you realize that something is the matter, why are you here? You say that you have seen a devil. I say that you have been working too hard for three weeks and have revealed some childhood injury done to your mind. You have pushed yourself past the mental and physical dangerpoint, and your subconscious is giving you warnings in the form of these visions."

"But how can you account for the piece of paper which Azuriel left with me," said Dr. Frost. "I have it right here." He reached inside his jacket.

"I am sure you have a piece of paper there," said Dr. Eckmann, "but that does not prove it was given to you by a devil. I am not mathematician enough to understand it, but it *is* in your own hand, is it not? You wrote it yourself, and then suppressed the memory of the act."

"What about my knowing about Azuriel? How would I have known that there was a demon by that name? I never heard the name before in my life."

"I suggest that you did," said Dr. Eckmann. "You must realize that nothing we know is ever wholly forgotten. You pulled the mem-

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ory of the name from your subconscious and wove this fantasy around it. Why you should have picked this particular pattern, I cannot imagine. We must investigate this, but it will take time. Come, please take the medicine. You will have a good night's sleep and we can talk about this in the morning when you are more relaxed."

Dr. Frost looked at the capsules and the glass of water. He reached out his hand and then drew it back. "No," he said.

"Why not?" asked Dr. Eckmann.

Dr. Frost looked very tired. "When I was studying in Europe before the war," he said, "I had a course with Schrodinger. I remember what he said to us in a lecture one day: 'Gentlemen, your instruments cannot lie to you. You may misinterpret them, you may read into them a significance which they do not possess. You may even be observing only the results of a short circuit. But you can not deny that your instruments have readings, nor that those readings have meaning.' No, Doctor, I know what I saw with my own eyes, and I do not have time for years of treatment. Azuriel gave me only twenty-four hours. Is there nothing you can do for me now?"

Dr. Eckmann said nothing, but gestured toward the capsules on the table near Dr. Frost's hand. Dr. Frost hesitated, and then put them in his pocket. "I'll take them with me," he said.

"If you leave," said Dr. Eckmann. "I will be forced to recommend that you be committed to an institution. Your visions might lead you to harm yourself or someone else."

"I also know a little law," said Dr. Frost. "You will need the opinions of two other psychiatrists and a court order before you can do that. It will take several days. By that time I will know whether you are right or wrong. I have only eighteen hours left."

He stood up and walked toward the door. "Please call me if I can help you," said Dr. Eckmann. "Thank you," said Dr. Frost and left the apartment. Dr. Eckmann sat still in his chair for a few minutes and then shook his head. He stood up and walked to his telephone.

The last place Dr. Frost visited was the home of a woman, Jean Connor. Dr. Frost had never married, for reasons which were never clear to him nor to his friends. He enjoyed the company of women, and as a young man had enjoyed a full social life. He was a good dancer, although he was a little heavy, now, for that, and he had a sense of humor, of the passive sort: he seldom told a joke, but was quick to laugh at one.

He had a young man's gestures with his hands, and a young man's

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innocence where women were concerned. This innocence was not an innocence of the flesh, but of the mind. He saw women as like himself, dressed in bodies of another shape, and was surprised and hurt when this conclusion led him to the inevitable mistakes of judgement.

In spite of this defect, or perhaps because of it, Jean Connor loved Dr. Frost with an intensity which would have surprised him, had he guessed that she loved him at all. His relationship with her had been much the same as his friendships with professional acquaintances, except for the outward forms of paying the check at dinners with her, and the holding of her coat. Being innocent, he did not realize that all such relationships between men and women are inherently unstable, bound to end either in marriage or angry separation. Jean Connor, however, knew more of such matters than Dr. Frost. Being a gently reared girl she had never flung herself at his head—and such a course might have been unwise in any event. But she had waited for two years, doing so in the belief that she would not wait in vain.

When he entered her apartment that evening she noticed the expression on his face and ran to put her arms around him. Concerned as he was, Dr. Frost noticed this, and was mildly surprised. But she recovered herself quickly and set about making him comfortable. She led him to a chair and asked him when he had last eaten. When he confessed that he had missed lunch entirely she gave a small hiss of affectionate exasperation and left the room to return in a few minutes with sandwiches and coffee. Only when he had eaten would she listen to him. She sat on the footstool while he talked for two hours.

When Dr. Frost finished he ran his hand over his eyes. "Well," he said, "What do you think?"

"You've been to these other people and asked them," she said. "What do *you* think?"

"I don't know," he said. "I don't know. I think I really saw him, I can't help that. But what should I believe? I can't accept Father Paul's idea that the universe is run by two opposing tyrants. Even if he's right, I can't see that a God who wants to use a man in the same way as Azuriel does should get my allegiance. Dr. Eckmann may be right, but I haven't enough time to find out. There's *never* enough time. But I do know what I saw."

"All right, John," she said. Then, looking at the tiredness in his face, she said "You've got to get some rest."

"You're right," he said, "I'll call a cab."

"No you won't," she said. She took him by the hand like a weary child and led him to her

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bedroom. He lay down on the bed, docile with fatigue, and she loosened his tie before she lay down beside him. She put her hand on the back of his neck and pulled his face toward her shoulder. For a moment, until he fell asleep, Dr. Frost felt at peace.

Later that night as she lay by his side in the darkness she felt sure that he was hers entirely.

In the morning Dr. Frost awoke. There were sounds in the kitchenette of the apartment and the faint domestic perfume of coffee was in the air. He ate breakfast gratefully, but a growing realization of the significance of her manner as she moved about the table to serve him made him feel nervous. When she asked him for his plans he told her that he wanted to walk and think the problem out. She looked unhappy, but agreed.

At the door he kissed her and said "Even you, my darling, even you." He smiled a little sadly and went out, leaving her puzzled face behind him.

Dr. Frost walked through the city for hours. Once he saw a riveter standing on a girder, high above the street, and watched for twenty minutes as the man walked back and forth on the orange beam, uncovered by the dreadful fall below him. Once he thought the man was about to fall, and almost shouted until he understood that he had seen only the motion of the clouds behind the figure. Then he turned and walked home.

Entering his study, he looked at the chair where Azuriel had been. It was empty. He moved behind his desk and sat down. For a long time he waited, looking at the dull reflection of the afternoon sun on the polished black leather of the chair. Then he reached into his pocket and pulled out the pills which Dr. Echmann had given him. He dropped them into the wastebasket, and they made a faint musical sound against its metal sides. He settled himself to wait for whatever was going to happen.

After a while a sheet of paper on his desk caught his eye. Was it really true that he had never seen these expressions before? How strange they were! How elegant! He took up his pen and began to work again.

At first, he did not even notice as the shadow in the armchair opposite him began to change once more, and his attention was so deeply absorbed that he was startled, looking up, to see that the two bright eyes observing him were blazing with triumph. ◄

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Here is another intriguing story by the young woman whose nom-de-plume *is Jane Beauclerk. Like its predecessor (WE SERVE THE STAR OF FREEDOM, July 1964) it takes us to the strange, yet not utterly strange, world ruled (after a fashion) by men called Stars. Once again the off-planet traders, with whom trade is very possibly not the prime consideration—and certainly not the only one—are involved in a singular transaction in which, it seems, nobody loses and everybody gains. Except, perhaps, that curious being, The Swimmer . . .*

LORD MOON

by Jane Beauclerk

"I HAVE BEEN TREADING WATER here for six or seven years," said the Swimmer, "waiting for him to come who will trample the sky and break the colors of earth beneath his feet."

"And what will you do when he comes?" asked Lord Moon.

"I will make him free of the wide seas, the depths and the powers of them, and send him up against your lords the little Stars, and against the twelve thousand Islands of Lorran that bar my way, and against the traders who taught me the prophecy these seven years ago, or it may be only six," said the Swimmer. "But I have a thought in my mind. Are you he?"

"No, not I," said Lord Moon. He sat on a swell of the sea, that rose and sank and rose again under him, and his hair streamed silver in the moonlight. As he spoke he rested one hand on a wave crest and leaned back strongly on the wind.

The Swimmer struck out at him with a snarl and a clawing hand. "You come to mock me in my grief," said the Swimmer. "You join league with the Islands of Lorran." And he cursed him spitefully, crying, "What are you? I will send him against you also."

"Send him to Lord Moon of the Purple River," he answered. "Let this help you to remember." And he took the curved knife from his belt and laid the flat of it on the Swimmer's head and brought it away again, leaving a curved bald spot in the Swimmer's tangled hair.

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Then Lord Moon walked swiftly over the sea, and the Swimmer followed him a little way, cursing and getting water in his mouth, but turned back soon.

It was near dawn when Lord Moon came ashore on the first of the twelve thousand Islands of Lorran. He found his ship beached before a cave and his men inside with their swords drawn, for fear of the people of Lorran. They put to sea hastily, and sailing westward from the island past the high bluffs they were shot at, but no harm done, and toward evening of the sixteenth day they came safe to the Purple River. Then Lord Moon went up to his tall house; but the sailors of his ship stayed below in the harbor, and there talked with the sailors of the Star of Knowledge, who had come at that time visiting to the Purple River.

"You serve a madman," said those who served the Star. "It is common knowledge that he wastes his learning and his power on these wild journeyings, and takes nothing from a book that he can take from his own sight. This is known as madness."

"True enough," said the others. "These sixteen days ago we watched all night for his sake on the shores of Lorran, while he walked solitary on the waves for a sight of that famous Swimmer whom none can trust." But they spoke without shame.

The next day Lord Moon crossed the river and talked with the Star of Love, a small sparkling withered man of great age. "And first," said the Star, "I hear it said that you have spoken with the Swimmer who wanders the oceans of the world. Let me look at you. No wounds? No water-stains? And your ship safe?"

"I came to him on foot," said Lord Moon. "You have heard it said that the Swimmer has been seen, these last years, nowhere but a little east of the Islands of Lorran?"

"That may be, that may be," answered the Star of Love. "I hear many things."

"I sought him there and I found him there, and he has given up wandering," said Lord Moon. "He has learned a prophecy of one who is to come in power, and he waits at the place of his coming, in hope of help against his enemies. As for me, I seek help from a surer power."

"But how on foot?" cried the Star of Love, and his jeweled fingers flashed. "Who can walk upon the sea and not be wet?"

"I," said Lord Moon. "It is a thing I have learned. But there are things I have yet to learn."

"Yet how did you come away unhurt?" asked the Star. "Did you find the Swimmer trustworthy? And what is this of a prophecy?"

"I found him peevish," said Lord Moon, "and I trust him very surely, for I rank now as one of

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his enemies. The prophecy is an old one, and it may be a good one. As for me, I seek a happier prophecy."

"An old one, is it?" said the Star of Love. "It may be I have heard it. Is such a one indeed to come?"

"If he comes," answered Lord Moon, "I think he will come to me, and I hope first to me. Meanwhile, I seek the coming of another."

"Ah, ah!" cried the Star of Love, nodding his gray head that was wreathed with jewels. "Sit down, my friend, and say how I can please you."

"I seek a wife," said Lord Moon, but he did not sit down.

"And that is better than to seek the Swimmer," said the Star. He sat behind his high table and poured out wine in a ruby cup. "Yes, and certainly you deserve a wife." He nodded, and his bright eyes flashed, like jewels among jewels. "She must be young, and merry, and a number of other things. She must—"

"She is all that," said Lord Moon, who took his life in his hands to interrupt thus his lord the Star, "and light-footed to boot. She is one who runs free on mountain tops."

"Ah!" cried the Star, much pleased. "Then your journeying has not been for nothing, after all. You have seen her?"

"I have seen her from far away," he answered; "and last night I saw her in a mirror I have made. She is only daughter to my lord the Star of Freedom."

"Right and fitting, right and fitting," nodded the Star of Love. He pulled to him a great globe of the world, and found out on it the dominion of the Star of Freedom. "There must be a ship sent," he said, "to inquire into the matter, and bring the woman if she is willing." And he looked foolishly at the globe.

Then the curtains of the doorway parted, and the Star of Knowledge came into the room. He was a bigger man than his host, but even older, and his face was like a parchment written all over with literary observations.

"Ah!" cried the Star of Love. "My good friend, we have need of your counsel. What route is best to take to the Star of Freedom?"

"That Star is more sought than found," answered the other wisely. "But there are many routes a man may take to his dominion." He leaned toward the globe and traced lines upon it with his crooked finger. "There is the southern route by the Straits of Anguish. There is the northern route across the Forbidden Sea. There is the route past Peaked Cape, and the route that follows the cliffs of Duanna. There is the route past the Hellebore Marshes, though that is not much taken now. But the best routes, and the safest, are that which crosses the dominion

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of the Star of Battle and that which passes the twelve thousand Islands of Lorran; and neither is good, and neither is safe."

"Let it be by the Islands," said Lord Moon, who could have told all this long since and in fewer words. And in due time it was settled, and Lord Moon was given hopeful prophecies and promises of help (he asked no more) and the ship was sent.

"It is an ill journey," grumbled the sailors.

"But a sane journey, and time it was made," said the captain.

"Yes, yes," said they, "and it is a good thing to see our Lord Moon settling down at last, and sending others on his errands, and planning to take a fine wife and live in comfort and leave his mad doings and searchings and all dangerous and unnecessary follies. But it is an ill journey all the same, and we shall be shot at." And they grumbled, being secretly afraid that Lord Moon would do these things they praised and take away their pride.

But east of the Islands of Lorran the Swimmer waited, treading water steadily and cursing now and then, and sometimes he put his hand to the bald spot on his head.

Now Lord Moon lived on beside the Purple River, and often he looked into the mirror he had made, and often he crossed the silver-colored bridge to talk with his lord the Star of Love. "I am troubled," he said.

"To be sure," said the Star. "You are troubled because you have no dominion of your own, and live here only by my suffrance, and you fear the woman will look scornfully on such uncertain power. You need not fear."

"No," answered Lord Moon. "I put only half as much trust in my power as in your kindness, but that is enough. It is another thing that troubles me."

"Ah, ah!" cried the Star. "It is because you have dealt little with women, then, that you are uneasy. My friend, take this mirror and see the folly of your fears."

"No," answered Lord Moon. "I have traveled much. It is not that which troubles me."

"Ah, then I understand," said the Star of Love. "You fear—"

"Not I," said Lord Moon, who took his life in his hands to contradict thus his lord the Star. "But it troubles me that I sent others on my errand. And I grow somewhat tired of mirrors."

Meantime the ship has passed the twelve thousand Islands of Lorran unharmed, though somewhat shot at, and on a cloudy evening it passed within bowshot of the Swimmer, but did not sight him. And in due time it reached the dominion of the Star of Freedom, and inquiries were made there. All this Lord Moon watched in the mirror he had made, and

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when the ship set sail again he took horse southward in the dead of night, to the confusion of his lord the Star of Love. It was a month later and more that he came home, on a clear night not long past evening. He rode his gray horse eagerly, and his hair streamed silver in the moonlight. They met him at the door with news.

"The man you set to watch your mirror reports it," they said; "so judge the truth of the news by the trust you put in your arts. The ship is taken, and the woman with it. They lie captive on the fifth of the twelve thousand Islands of Lorran."

Lord Moon put his hand to his face as one who would wipe away a pain. "Then they were fools," he said. "What made them pass by the fifth island?"

"The Swimmer, as we understand," they said. "It is a long story, and mostly unbelievable."

"I will hear it another time," said Lord Moon, and he strode into his tall house and found his mirror and the man set to watch it. The man trembled a little, and only a little, because he knew his lord.

"I will make a larger mirror," said Lord Moon, turning it this way and that to catch the light. "This comes of sending others on my errands, which I think I will not do again. How did they come to trust the Swimmer? Ah, here is she. But who are these who are not my sailors?"

"They are those who serve the Star of Freedom," answered the man.

"And indeed they serve him well in this dungeon," said Lord Moon. "Where are my sailors?"

Then he heard the story, how the ship had put back to port in a storm and somewhat leaking, and how the Star of Freedom had outfitted another ship with his own crew to carry his daughter, and how these, not knowing the passage, had met the Swimmer and trusted his advice and so ended captive on the fifth of the twelve thousand Islands of Lorran. And Lord Moon said, "Take the beast from my saddlebag and put it in my study, and I shall deal with it another time." Then he looked once more into the mirror, and strode out of the house and across the bridge. But his people opened the saddlebag and found the beast in it, many days dead and embalmed in spices, no more than two spans long and furred all over with soft gray stuff like the ravelings of silk.

"What is it?" said one.

"It is the beast called tues," said another. Then they took it and laid it carefully in Lord Moon's study; for from this beast's heart a skillful man may make a perfume, such as few are lucky enough to meet with in a lifetime.

Now Lord Moon came to the

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Star of Love where he sat nodding over a ruby cup, while his long-time guest the Star of Knowledge talked of this and that. "I have only one ship," said Lord Moon, "and it lies far east of the Islands of Lorran. I ask for another to fetch the daughter of my lord the Star of Freedom."

"Right and fitting, right and fitting," cried the Star of Love joyously. "You shall have a ship, but take care not to rush too rashly into this worthy danger. Rush more cautiously."

"Rush however you please," said the Star of Knowledge, "if you seek sure death."

"I seek a wife," said Lord Moon.

"To be sure," said the Star of Love hastily. "But if it means your death, you shall have no ship."

"Why should it mean my death?" asked Lord Moon.

"For many evident reasons," answered the Star of Knowledge. "As, for instance, that the people of Lorran hold the woman captive only to tempt you into their hands; as that doubtless they have laid traps for you; as that no man has set foot on any one of the twelve thousand Islands of Lorran and returned alive—"

"All these are shallow reasons," said Lord Moon, who took his life in his hands thus without long consideration; "and the third is a reason of ignorance, My Lord, since I have set foot on the first island."

"They are deep reasons," said the Star of Knowledge, "and I have never spoken from ignorance."

"They are deep reasons," said the Star of Love, "and you shall have no ship."

So Lord Moon crossed the silver-colored bridge over the Purple River, and went into the tall house where he lived by suffrance of the Star of Love. He went into his study, but the sight of the beast tues turned him away. He lay down to sleep, but the blood ran sore in his veins and the hair ached on his head. At last he went to his library to seek a useful book, and there they brought him news.

"There are strange men come," they said, "bursting the night to tatters, and asking for you in a foreign speech."

"Bring them," he answered, and they were brought.

They spoke to him awkwardly in the language of Apertia, and Lord Moon turned away and brought down a book from the shelves. "Learn a better speech," he said, and gave it to the leader of the strangers, a tall stiff man with hiding eyes. The man took it in much confusion, but in due time he opened it and read, for that was a book so artistically written that any man could read it, whether or no he knew the language. Then Lord Moon left him reading, and followed those others down the river bank to the place where they

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had come from the sky, and they showed him the vessel they had come in. Much of the night he spent there, seeing and touching, but a man can learn little of such a thing in the language of Apertia, and before morning he came back to the library. The leader of the strangers was no more than half through the book, so Lord Moon gave him and the others lodging and went cheerfully to sleep.

The next day, and for some days after that, they read and talked together, while the man learned a better speech than that of Apertia. Then they began to talk of other things.

"Who are you?" asked the man.

"I am Lord Moon," answered Lord Moon patiently.

"I know that," said the man, "for whatever it is worth."

"It is worth much to me," said Lord Moon. And he told him this and that, which seemed to interest him.

"A very singular feudal system," said the man, taking notes. "Considerable individualism, intricate cooperation, a reasonable lack of anarchy, and not the slightest vestige of legal freedom."

"There are some free in this world," said Lord Moon. "I myself am free in a way, who pass everywhere and have dominion nowhere. Lord Sun is free above all others, who passes everywhere and has dominion where he passes. The twelve thousand Islands of Lorran are free, as they will tell all who come in arrow-range. And there are others free, and over them my lord the Star of Freedom has dominion."

"But how can you call these people free," said the man, "if they are under the dominion of one of your Stars?"

"How else should they be under his dominion?" answered Lord Moon. "As I myself am somewhat under his dominion, and somewhat under that of the Star of Knowledge, and now greatly under the dominion of my lord the Star of Love. Dominion is of the heart. But there are others who call themselves free, as the Swimmer."

"The Swimmer?" said the man. "Who or what is that?"

"A great wrecker of ships and pursuer of sea turtles," said Lord Moon. "I had hopes you might know him. You do not speak the tongue of Apertia like an Apertian."

"No," said the man. "We learned it from a strange creature treading water in the sea where we landed. Indeed, he sent us to you."

"My hopes were not in vain," said Lord Moon. "This Swimmer is one who swims without rest or charity. Ships meeting him ask what route to take, for no other knows so well the ways of the seas, but none can trust him. Often he sends them by safe ways, and often to destruction. He takes to himself many enemies, me among them,

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but almost above all the Islands of Lorran."

"Are those the islands," asked the man, "from which such clouds of arrows rose when we passed over?"

"Doubtless," said Lord Moon. And they talked on. "But you come from a world of fools," said Lord Moon presently. "Small wonder you left it."

"We shall go back soon," said the man, looking at him indulgently.

"Why should you leave this world?" asked Lord Moon. "Surely we have given you little reason."

"We shall come back," said the man, "and others with us." And he began to talk of the changes that would be achieved. "We are very curious to learn of this and that," he said. "We must make studies, we must observe. Of course we shall set up a colony here, and that will mean a number of things." And he explained some of them. Lord Moon frowned.

Then they went into Lord Moon's study, and he showed the man some of his work, first turning his mirror to the wall. The man was strangely affected. "I think," he said, "that we have come into fairyland."

"What is fairyland?" asked Lord Moon. And when the man had told him, he showed his other things.

"I think," said the man slowly, "that we have come into a place where magic is a valid form of science. But that is impossible."

"I serve also the Star of Impossibility," said Lord Moon.

That night he crossed the silver-colored bridge and spoke with his lords the Stars. "It may be the Swimmer waited to some purpose," he said. "These men can destroy us all. They come in scientific curiosity, which is worse than anger. Their grestest desire is to learn the names of things." And they talked.

Meantime the Swimmer swam slowly this way and that way, snickering hopefully to himself. And the daughter of the Star of Freedom looked westward from the fifth island and waited hopefully, for she knew somewhat of Lord Moon. And on a misty morning Lord Moon asked the stranger, "Do you trust me?"

"You have given me no reason not to trust you," said the man.

"I have taken pains not to," said Lord Moon. "I put much trust in your power. Let us bargain." And he told the man of the Star's daughter and the Islands of Lorran and the ship that had not come home and the other ship he could not beg. "If you bring me the woman," he said, "I swear that your greatest desire shall be granted."

"But how?" asked the man.

"I have means," answered Lord Moon. And he spoke of certain of his means, and of the power of his lords the Stars.

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"We will bring you this woman," said the man, in due-time. "Not that I believe in your magic, but as an act of friendship. It seems that these Islands of Lorran are quite outside the established government, such as it is, and there is little to lose by offending them. Now as to our greatest desire—"

"You have no need to tell me," said Lord Moon. "All shall be arranged."

Now the strangers left in their vessel, and Lord Moon busied himself in his study. All night he worked, and the next day, and long into the next night. One brought him food there, and found him speaking by a curious device with his lord the Star of Impossibility. And toward the middle of that night they brought him news.

"The strangers have come back," they said, "trampling the sky to fragments, and bringing the daughter of the Star of Freedom."

Lord Moon leaned his face in his hands. Then he gave orders concerning the lodging to be provided for the Star's daughter, and he took a little phial and went to the strangers.

"Bring wine," he said, and it was brought and poured out to all the strangers. Then Lord Moon let fall a drop or two from the phial into each cup. "Drink all," he said, "and have your reward."

They were not eager for it. "What is this?" asked the leader.

"Do you trust me?" asked Lord Moon. So they drank.

Then all slept, except Lord Moon, and he crossed the silver-colored bridge and spoke with his lords the Stars. "I have done them an unkindness," he said. "What they drank will so swell and bloat their curiosity that in no world can they pause to satisfy it thoroughly, and their greatest desire will be to mark the names of worlds on a large map. I think that tomorrow they will go to seek new worlds."

"Ah, ah!" cried the Star of Love. "I could give you a potion for the woman, but I think you have no need of it."

"Certainly I was right," said the Star of Knowledge, "in counseling you to shun the Islands of Lorran."

So that night all slept well. And early in the morning Lord Moon heard a great noise, and knew it was the strangers trampling the sky in their strange vessel. He rolled over and slept again, and better this time. And a little later the Star of Freedom's daughter woke laughing. That morning the thought of his unkindness weighed heavy on Lord Moon, at moments; and in the afternoon, to forget it, he busied himself with the beast tues. None could deny that the results were happy.

But the Swimmer, swimming eastward of the Islands of Lorran, shook his fist at the sky and cried spitefully, "Fools, they have gone up against the wrong stars!" ◀

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SCIENCE

THE CERTAINTY OF UNCERTAINTY

by Isaac Asimov

IN HIGH-SCHOOL, ONE OF THE PIECES of literature I was required to read was James Barrie's, "The Admirable Crichton." I reacted to it quite emotionally, but that is not the point at this moment. What is the point is that one of the characters, a well-born young goof named Ernest, had carefully polished up an epigram which he sprang several times during the play.

It went, "After all, I'm not young enough to know everything."

And whenever he said it, someone would answer (impatiently, if the head of the family; wearily, if one of the ladies; paternally, if the competent butler), "You mean you're not *old* enough to know everything."

Ernest nearly died of frustration and so did I, for *I* knew what he meant.*

The memory of the epigram stays with me because, as it happens, 19th Century science was young enough to know everything. Near the opening of that century, the French astronomer, Pierre Simon de Laplace had said, "If we knew the exact position and velocity of every particle in the universe at any one particular moment, then we could work out all the past and future of the universe."

The universe, in other words, was completely determinate, and when I read of this (being a convinced determinist myself) I fairly licked my lips with pleasure.

Of course, I understood that we didn't actually know the exact position and velocity of every particle in the universe at any one particular moment, and that we almost certainly never would. However, we could

* *He meant that young people* thought *they knew everything, but that as they grew older and wiser they realized they didn't. Good Lord!*

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know them *in principle* and that made the universe completely determinate *in principle.*

Wasn't it a great feeling, though, to be young enough to know everything!

But alas we grow older and wiser and knowledge slips through our fingers after all and leaves us naked in a cold and hostile universe. My day of reckoning came in 1936 when I read a two-part serial, entitled "Uncertainty", in Amazing Stories. For the first time in my life I found out that the universe was not completely determinate, and couldn't be completely determinate *even in principle.*

The author of the serial was John W. Campbell. John has shocked me many times since, but never with the intensity of that first time. So let's talk about uncertainty.

The basic principle is this: The very act of measurement alters the quantity being measured.

The most common example used to illustrate this is the measurement of the temperature of a container of hot water. The easiest way is to insert a thermometer, but if the thermometer is at room temperature, as it probably is, it withdraws heat from the water and when it finally registers a temperature, that temperature is slightly less than the temperature was before the thermometer was inserted.

This difficulty might be circumvented if the thermometer happened to be exactly at the temperature of the water to begin with. But in that case, how would you know the right temperature to begin with unless you measured it first?

Of course, the thermometer might just happen to be at the right temperature, and you could tell that because after insertion into the water the reading would remain the same as before. The thermometer would neither gain nor lose heat; and the temperature of the water would remain as it was and you would have the true and exact temperature.

You wouldn't even have to rely on pure chance. You could, for instance perform a "thought experiment" (that is, one which is conceivable, but which supposes conditions far too ideal and tedious to put into actual practice). We could divide our sample of water into independent sections each at the same temperature as all the rest.

We can then stick thermometers into the various sections, each thermometer being carefully warmed in advance to a different temperature, at one-degree intervals. One of those thermometers will register the same temperature before and after and there you would have the true and exact temperature.

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Well, true and exact to the nearest degree anyway. Of course, that is just a detail, we could work with thermometers adjusted to differences of tenths of a degree, or hundredths, or thousandths. (In a thought experiment there is scarcely any limit to the refinement of our instruments.) But then there would always be a next stage in refinement.

Another way of making things finer is to use a smaller and smaller thermometer. The smaller the thermometer, the less heat it will be able to take up or give off and the smaller the deviation from the truth that it will produce. By taking measurements with thermometers at different size, one might even be able to calculate what the temperature would be with a "zero-size" thermometer.

Of course, though, to make a true, ultimate calculation of the temperature with a zero-size thermometer, you must be able to read the temperatures given by the various finite-size thermometers with infinite exactness, and you can't do that.

In short, for various reasons, a perfectly exact measurement cannot be made, and there will always be a residual uncertainty, however small.

Of course, you can shrug this off as merely a philosophic point of no practical importance. You may not be able to make a measurement infinitely exact, but you can make it as exact as necessary. If the necessity for refinement sharpens, you need then only make sharper measurements. The uncertainty of your measurement will never be zero but (the old argument went) it can be made to approximate zero as closely as you wish.

This, however, is true only if it is taken for granted that you can make the effect on the measurement of the act of measurement itself very small. For this, the measuring device must be very small, or, at least, contain a very small component. But what if there is an ultimate limit to smallness so that, when you try to measure some property of that ultimately small object, you must make use of a measuring device as big as itself, or bigger.

Then, too, suppose that in measuring one property of a system, you upset a second property; and that the closer and more accurate the measurement of the first, the more wildly disturbed is the second. To gain certainty in one place at the cost of gross uncertainty in another is no true gain.

Consider, for instance, the electron, which has a mass of 9.1×10^{-28} grams. This is, as far as we know, a rock-bottom minimum to mass. No object that possesses mass at all, possesses less mass than the electron.

Suppose, then, we want to measure some of the properties of an

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electron speeding by. With Laplace's great statement in mind, we want to determine the position and velocity of that electron at some given moment. If we do that there will still remain an enormous gap to the ultimate goal of learning the position and velocity of *all* particles at one particular moment, but the longest journey begins with but a single step. Let's concentrate on one electron to begin with.

The usual method of determining the position of anything is to receive light radiated by it, or to strike it with light and received the reflection. In short, we see the object, and therefore know where it is.

An ordinary object is not appreciably affected by the light it reflects, but an electron is so small that it could be strenuously affected by that light. The idea, therefore, would be to use a very, faint beam of light, one so faint that the electron would not be appreciably affected.

Unfortunately, there is a limit to light's faintness. Just as mass comes in thus-small-and-no-smaller units, so do all forms of energy. The least amount of light we can use is one photon, and if we try to send a photon of ordinary light at an electron, the wavelength associated with that photon is so long that it "steps over" the electron, and we can't see it.

We must use radiation of far shorter wavelength, an x-ray or, better, a gamma-ray, and receive the reflection by instruments. That is fine, but the shorter the wavelength, the greater the energy content of the photon. If a gamma-ray photon hits an electron, that electron might as well be kicked by a mule. It goes skittering off somewhere.

In other words, we may determine the position of the electron at a given moment, but the very act of that determination alters the velocity of that same electron at that same moment so that we cannot be sure what the velocity is.

Far more complicated thought experiments have been concocted and it turns out always that determining an electron's position alters its velocity and that determining an electron's velocity alters its position. A *simultaneous* determination of both properties, with the uncertainty in *each* as close to zero as you wish turns out to be impossible. At least, no one has ever devised a thought experiment which would yield such simultaneous exactness. Even Einstein tried and failed.

In 1927, the German physicist, Werner Heisenberg, formalized this view by announcing what he called the "uncertainty principle." This is now accepted as one of the fundamental generalizations of the physical universe; as fundamental, universal, and inescapable as a generalization can be. In fact, insofar as there can be certainty about anything at all in the universe, there is the certainty of uncertainty.

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Heisenberg expressed the principle in an equation which we can work out as follows. Let's symbolize position as p and momentum (which is equal to the mass of an object times its velocity) as mv. Uncertainty in a measurement is often expressed as the Greek capital "delta," which is just a triangle. The uncertainty in the measurement of position is therefore Δp and that in the measurement of momentum is Δmv. The equation expressing Heisenberg's uncertainty principle is, therefore:

$$(\Delta p)\,(\Delta mv) = \frac{h}{2\pi} \qquad \text{(Equation 1)}$$

The symbol, h, is Planck's constant (see A PIECE OF THE ACTION, F & SF, April 1964) and π (the Greek letter "pi") is the well known ratio of the circumference of a circle to its diameter (see A PIECE OF PI, F & SF, May 1960).

If we measure position in centimeters, mass in grams, and velocity in centimeters per second, then the value of h comes out to be 6.6256×10^{-27} erg-seconds. The value of π is, of course, 3.14159. We can therefore express Equation 1 (very nearly), as:

$$(\Delta p)\,(\Delta mv) = 10^{-27} \qquad \text{(Equation 2)}$$

In a way, uncertainty arises out of the "graininess" of the universe; out of the fact that energy and mass come in packages of fixed size; that size being ultimately determined by the value of Planck's constant. If Planck's constant were equal to zero, there would be no uncertainty at all. If Planck's constant were quite large, matters would grow so uncertain that the universe would seem chaotic.

The situation is analogous to that of a newspaper photograph built up out of black and white dots, or a television picture built up out of closely spaced lines. The coarser the dots or the lines, the fuzzier the picture and the poorer the detail; the finer the dots or the lines, the clearer the picture and the sharper the detail.

The graininess of the universe as represented by Planck's constant is fine indeed, exceedingly fine; so fine that before the twentieth century, the graininess was never noticed. It had seemed that all measurements could be made as accurately as time and patience would permit and that, in principle, this accuracy could be of unlimited closeness to the ultimate of zero uncertainty.

The question now is whether the graininess of the universe is so fine that even now, in the twentieth century, it might not be fine enough to ignore; whether it might not be a point of philosophic interest only and of no concern to practical men, or even to practical scientists.

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Let's consider Equation 2 again. Heisenberg spoke of the uncertainty of the measurement of momentum rather than of velocity because as the velocity of an object increases, so does its mass (see THE BUG-EYED VONSTER, F & SF, June 1960) and the two are naturally treated together. However, mass alters appreciably only at very high velocities, and if velocities are kept below, say, a thousand miles a second, we can, without too great an error, consider the value of *m* to be constant.

In that case we can deal with the uncertainty in velocity rather than momentum and write Equation 2 as:

$$(\Delta p)\,m\,(\Delta v) = 10^{-27} \qquad \text{(Equation 3)}$$

Transposing *m*, we have:

$$(\Delta p)\,(\Delta v) = \frac{10^{-27}}{m} \qquad \text{(Equation 4)}$$

Now we have an equation which tells us how to calculate the uncertainty in the simultaneous measurement of position and velocity of any particle, just the pair of measurements Laplace wanted to make. Under the circumstances outlined in Equation 4, we can see that we don't want to determine position *too* accurately for that will throw the measurement of velocity way off. Nor do we want to be too accurate about velocity at the expense of position. Let's make the healthy compromise of treating both position and velocity alike and making the measurements in such a way that the uncertainty in both cases is equal. We can do better with either one taken separately but we cannot possibly do better with both taken together.

Of the two measurements, that of position is the more dramatic. It is easy to see that we might not be certain of the exact velocity of an object, but surely (common-sense tells us) we ought to know where it *is*, for Heaven's sake. So, in Equation 4, let us let uncertainty in position equal uncertainty in velocity (numerically only, for the units will still differ) and let's represent both as (Δp). That gives us:

$$(\Delta p)^2 = \frac{10^{-27}}{m} \qquad \text{(Equation 5)}$$

$$\Delta p = \frac{3.2 \times 10^{-14}}{\sqrt{m}} \qquad \text{(Equation 6)}$$

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We can put Equation 6 to work. We are dealing with measurements of mass in grams, so let's consider the uncertainty involved in measuring the position and velocity of a 1 gram mass. (This is not a large mass; 1 gram is equal to about 1/28 of an ounce.)

If m is set equal to 1, then the uncertainty in position comes out, according to Equation 6, to be 3.2×10^{-14} centimeters. Another way of putting this uncertainty in position is: 0.000000000000032 centimeters.

Modern techniques do not make it possible to measure the position of a gram weight that closely and no one in his right mind would need to measure it that closely for any practical purpose. However, it is important to remember that no matter how we refine our measurements, no matter how much time we take, how much ingenuity we expend, it is impossible to measure the position of a gram weight to an uncertainty of less than 0.000000000000032 centimeters; at least not without introducing a larger uncertainty in velocity; and it is *both* position and velocity that Laplace requires.

Yes, yes, you may say, but 0.000000000000032 centimeters is close enough. If we can get all the particles in the universe that closely positioned and velocitied, we can still stretch things far back into the past and far forward into the future.

Ah, but this unavoidable uncertainty of 0.000000000000032 centimeters is for a 1-gram weight. If you look at Equation 6 you will see that as mass decreases the value of Δp must increase. For instance, in Table 1, I have listed the uncertainties for a variety of objects that are considerably smaller than 1 gram in mass.

Table 1

Object	*Approximate mass (grams)*	*Uncertainty of position (centimeters)*
Ameba	4×10^{-5}	0.000000000016
Bacterium	1×10^{-12}	0.000000032
Gene	4×10^{-17}	0.000005
Uranium atom	4×10^{-22}	0.0016
Proton	1.6×10^{-24}	0.025
Electron	9.1×10^{-28}	1.1

As you see, the graininess of the universe seems to be sufficiently fine for us to remain undisturbed by uncertainty even in the case of ordinary

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microscopic objects. If we measure the position of a bacterium down to an uncertainty of merely three hundred-millionths of a centimeter, surely we can't complain.

Only when we penetrate lower than the merely microscopic and approach the atomic and subatomic are we really in trouble. Only then does the uncertainty principle become something that can't be shrugged off as merely academic.

In fact, the situation is even worse at that lower end of the scale than it appears to be in Table 1. You might console yourself by saying that even a proton can be pinned down to within a fortieth of a centimeter, which isn't so awful, and that only the electron gives us trouble.

However, why use an arbitrary, unchangeable unit of length such as the centimeter? Why not adjust the unit to the object, by taking the object's own diameter as the measure of position? The reason for this is simple. If you yourself shift your position by a hundredth of a centimeter, this is unimportant and the ordinary observer will neither know nor care that you have moved. If, however, an ameba shifts its position by a hundredth of a centimeter, it moves the distance of its own diameter and anyone observing the ameba under a microscope would see the move and find it highly significant. So let's prepare Table 2.

Table 2

Object	*Approximate diameter (centimeters)*	*Uncertainty of position (diameters)*
Ameba	0.016	0.000000001
Bacterium	0.0001	0.0003
Gene	0.0000034	1.5
Uranium atom	0.00000001	160,000
Proton	0.0000000000001	250,000,000,000
Electron	0.0000000000001	11,000,000,000,000

From this standpoint, affairs on the atomic and subatomic level are wildly uncertain, tremendously uncertain. If we try to ignore uncertainty on the atomic and subatomic level the results are simply grotesque. We cannot possibly view subatomic particles as tiny billiard balls because we can never pin down the position of such a tiny billiard ball. The best we can do (even if we are willing to increase the uncertainty in velocity tremendously) is to view it as a fuzzy object.

You might also speak of a particle that exists but that you can't detect

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as a particle, and to suppose that this particle has a particular probability of being here, or there, or in the other place. That is why it is so useful to consider particles as possessing wave-properties. Not only does the wave take up room and appear "fuzzy" but the equations that describe the waves also describe the probabilities of the particle being at this or that point in space.

The graininess of the universe is so coarse, relatively, at the subatomic level, that there is no way in which we can get a meaningful picture of atomic structure by using analogies from the ordinary world, where the graininess of the universe appears so fine that it can be ignored altogether. The best that can be done (and what I always do, for instance) is to advance misleading simplifications and hope they don't mislead too badly.

Of course, if the universe is grainy, it would be interesting to find evidence of the grains on a large scale, too, and not just among protons and electrons.

We can, indeed, imagine large-scale situations where the principle of uncertainty would make itself manifest. One such situation is described in an excellent book entitled "The Laws of Physics" by Milton A. Rothman* (Basic Books, 1963).

Imagine, says Rothman, an enclosed box containing a perfect vacuum and two hard balls which are perfect spheres. The box is perfectly insulated so that there are no mechanical vibrations of any sort, no heat differences from point to point, nothing. The only force in the box is that of gravitation.

If one ball is fixed securely to the bottom of the box and the second ball is allowed to drop downward squarely on the apex of the fixed ball, then, by the classical laws of mechanics, the moving ball will bounce directly upward again, fall down upon the apex once more, bounce directly upward again and so on, for a great many times.

However, the principle of uncertainty would indicate that the ball could not *certainly* hit the exact apex, no matter how carefully it was aimed. And even if it did hit the exact apex, there could be no certainty that it would hit it again the next bounce. Once the position of strike varied from the apex by the tiniest amount, the moving ball would rise in a direction inclined by the tiniest degree to the vertical and would then strike the fixed ball even further from the apex on the next bounce

** Rothman is a professional physicist of worth, but more than that he is also a long time science-fiction fan, quite active in fannish circles. He even published a couple of science-fiction stories under a pseudonym many years ago.*

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and move up in a direction inclined even more to the vertical, and so on. After ten or twelve bounces, says Rothman, there would be a large probability that the moving ball would miss the fixed ball altogether, no matter how inhumanly carefully it had been aimed in the first place.

A similar situation involves a needle coming to a precise mathematical point. Imagine such a needle balanced on its point in a box free of vibration and heat differences and containing a perfect vacuum. The needle would only remain balanced on the mathematical point if its center of gravity were *exactly* over that point. But, by the principle of uncertainty, the center of gravity could only be within a certain distance of the direct-overheadness. As soon as it departed from direct-overheadness, however slightly, gravity would cause it to depart still further, and it would fall.

In short, the principle of uncertainty makes it impossible to balance a needle on a mathematical point, even under idealized and perfect conditions.

But these are imaginary situations. They involve large-scale objects, yes, but under conditions that cannot, in fact, be set up. Well, then, let's try something else.

As we generally tend to think of absolute zero, it is the temperature at which the energy of motion of atoms and molecules falls to zero. By that view, the vibration of atoms in any substance (all of which are solid in the neighborhood of absolute zero, one would think) slows to nothing and a deathlike and perfect immobility is all that is left.

But that is the view of classical physics, and not that of modern physics. Once the uncertainty principle is accepted, then we can't permit zero energy of motion at any time or under any conditions. If, at absolute zero, atoms were really and truly perfectly at rest, then we would know their velocity to be exactly zero. But we can't ever know velocity exactly. All we can say is that at absolute zero, the energy of atoms is within a certain very close approach to zero velocity, and that the atoms do continue to move, just a little bit.

This small residual "zero point motion" which atoms and molecules retain even at absolute zero represents a *minimum* energy that cannot be removed without violating the inviolable uncertainty principle. For that reason, there can be no temperature lower than absolute zero. Nevertheless, energy content at absolute zero, while a minimum, is *not* zero.

Has this minimum energy any effect that can be observed? Yes, it does. The solid substance whose atoms are most easily jostled apart, and into liquid form, is solid helium. The minimum energy at absolute zero is sufficient for the purpose and the result is that under ordinary

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conditions, helium remains liquid *even at absolute zero*. Solid helium can only be formed under considerable pressure.

There, then, is a tangible effect of the uncertainty principle under large-scale conditions, and in the real world, not in some unattainable thought-experiment.

Is this still too esoteric for you? Is absolute zero and liquid helium too specialized a display of the power of the uncertainty principle to be impressive?

How about this, then? If the uncertainty principle did not exist, neither would the universe as we know it; for the existence of all atoms other than hydrogen depends on the uncertainty principle.

But my space, alas, is used up.—Another time?

The article above is Isaac Asimov's 78th for this magazine, and this seems as good a time as any to take a step back and consider his contribution to F&SF and to the fields of science and literature. About a year ago, *Science* (the organ of The American Association for the Advancement of Science) said: "Essays such as these constitute a worthy and vitalizing element of the current literature of science . . . At present, men of Asimov's scientific erudition and literary skill are far too rare. One can only hope that the growing literature of science will bring forth more like him." *

On April 5, 1965 Dr. Asimov will be in Detroit to be honored at the 149th national meeting of The American Chemical Society. There he will be presented with the Society's $1000.00 James T. Grady Award—the highest honor a science-writer can receive in this country. The award is intended to recognize and stimulate outstanding science writing

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* *From a review of A VIEW FROM A HEIGHT, Doubleday, 1963, a collection of Dr. Asimov's essays from this magazine. Other hard-cover collections of essays from* Fantasy and Science Fiction *are: FACT AND FANCY, Doubleday, 1962; ADDING A DIMENSION, Doubleday, 1964; OF TIME AND SPACE AND OTHER THINGS, Doubleday, 1965.*

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which materially increases the public's knowledge and understanding of science.

These words—this honor—are all richly deserved. The only melancholy (if selfish) note is that Dr. Asimov has not written much fiction lately. The brief and poignant tale which follows is an exception. It is also proof that next to the Abacus on Isaac Asimov's desk, still lies the Rose.

EYES DO MORE THAN SEE

by Isaac Asimov

AFTER HUNDREDS OF BILLIONS of years, he suddenly thought of himself as Ames. Not the wavelength combination which, through all the universe was now the equivalent of Ames—but the sound itself. A faint memory came back of the sound waves he no longer heard and no longer could hear.

The new project was sharpening his memory for so many more of the old, old, eons-old things. He flattened the energy vortex that made up the total of his individuality and its lines of force stretched beyond the stars.

Brock's answering signal came.

Surely, Ames thought, he could tell Brock. Surely he could tell somebody.

Brock's shifting energy pattern communed, "Aren't you coming, Ames?"

"Of course."

"Will you take part in the contest?"

"Yes!" Ames's lines of force pulsed erratically. "Most certainly. I have thought of a whole new art-form. Something really unusual."

"What a waste of effort! How can you think a new variation has been thought of in two hundred billion years. There can be nothing new."

For a moment Brock shifted out of phase and out of communion, so that Ames had to hurry to adjust his lines of force. He caught the drift of other-thoughts as he did so, the view of the powdered galaxies against the velvet of nothingness, and the lines of force pulsing in endless multitudes of energy-life, lying between the galaxies.

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Ames said, "Please absorb my thoughts, Brock. Don't close out. I've thought of manipulating Matter. Imagine! A symphony of Matter. Why bother with Energy. Of course, there's nothing new in Energy; how can there be? Doesn't that show we must deal with Matter?"

"Matter!"

Ames interpreted Brock's energy-vibrations as those of disgust.

He said, "Why not? We were once Matter ourselves back—back—Oh, a trillion years ago anyway! Why not build up objects in a Matter medium, or abstract forms or—listen, Brock—why not build up an imitation of ourselves in Matter, ourselves as we used to be?"

Brock said, "I don't remember how that was. No one does."

"I do," said Ames with energy, "I've been thinking of nothing else and I am beginning to remember. Brock, let me show you. Tell me if I'm right. Tell me."

"No. This is silly. It's—repulsive."

"Let me try, Brock. We've been friends; we've pulsed energy together from the beginning—from the moment we became what we are. Brock, please!"

"Then, quickly."

Ames had not felt such a tremor along his own lines of force in—well, in how long? If he tried it now for Brock and it worked, he could dare manipulate Matter before the assembled Energy-beings who had so drearily waited over the eons for something new.

The Matter was thin out there between the galaxies, but Ames gathered it, scraping it together over the cubic light-years, choosing the atoms, achieving a clayey consistency and forcing matter into an ovoid form that spread out below.

"Don't you remember, Brock?" he asked softly. "Wasn't it something like this?"

Brock's vortex trembled in phase. "Don't make me remember. I don't remember."

"That was the head. They called it the head. I remember it so clearly, I want to say it. I mean with sound." He waited, then said, "Look, do you remember that?"

On the upper front of the ovoid appeared HEAD.

"What is that?" asked Brock.

"That's the word for head. The symbols that meant the word in sound. Tell me you remember, Brock!"

"There was something," said Brock hesitantly, "something in the middle." A vertical bulge formed.

Ames said, "Yes! Nose, that's it!" And NOSE appeared upon it. "And those are eyes on either side," LEFT EYE—RIGHT EYE.

Ames regarded what he had formed, his lines of force pulsing slowly. Was he sure he liked this?

"Mouth," he said, in small quiv-

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erings, "and chin and Adam's apple, and the collarbones. How the words come back to me." They appeared on the form.

Brock said, "I haven't thought of them for hundreds of billions of years. Why have you reminded me? Why?"

Ames was momentarily lost in his thoughts, "Something else. Organs to hear with; something for the sound waves. Ears! Where do they go? I don't remember where to put them?"

Brock cried out, "Leave it alone! Ears and all else! Don't remember!"

Ames said, uncertainly, "What is wrong with remembering?"

"Because the outside wasn't rough and cold like that but smooth and warm. Because the eyes were tender and alive and the lips of the mouth trembled and were soft on mine." Brock's lines of force beat and wavered, beat and wavered.

Ames said, "I'm sorry! I'm sorry!"

"You're reminding me that once I was a woman and knew love; that eyes do more than see and I have none to do it for me."

With violence, she added matter to the rough-hewn head and said, "Then let *them* do it" and turned and fled.

And Ames saw and remembered, too, that once he had been a man. The force of his vortex split the head in two and he fled back across the galaxies on the energy-track of Brock—back to the endless doom of life.

And the eyes of the shattered head of Matter still glistened with the moisture that Brock had placed there to represent tears. The head of Matter did that which the energy-beings could do no longer and it wept for all humanity, and for the fragile beauty of the bodies they had once given up, a trillion years ago.

Coming next month . . .

. . . is a new story of "The People" by **ZENNA HENDERSON** and an SF tale by **NORMAN KAGAN** (FOUR BRANDS OF IMPOSSIBLE, Sept. 1964). Mr. Kagan's new story, THE EARTH MERCHANTS, is sure to stir up some violent reactions, so be on hand—read, enjoy, and by all means react!

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Unless you are Welsh, you may not be able to swallow this story about Aunt Milly with the nice level croup and the pasterns smooth and true. We think you will enjoy its taste, though, for Mr. Guttridge has written a story with such genuine charm and flavor as to make it irresistible.

AUNT MILLICENT AT THE RACES

by Len Guttridge

YOU'VE HEARD WHAT THEY SAY about the Rhondda Valley. How the spread of industry cast a blight upon the verdant land and just as ineradicably scarred with fear and suspicion the souls of its people, etc. That more or less is the popular romantic notion. But it wasn't the coal mines and smelting furnaces which stamped the faces of Pontypandy at least, my birthplace, with permanent expressions of gall. Instead, I blame the economic crisis which struck following my father's exploitation of Aunt Millicent's overnight transformation into a horse.

Interior alterations may already have begun, so to speak, but the first surface indications that Aunt Milly was not her usual self appeared half-way through my tenth birthday party, forever wrecking my father's long reign as life and soul of such occasions. He had just supervised the usual gamut of infant games and our carpet was littered with small panting bodies, mine included. His sergeant-major bellow jerked us then into giggling attention and he began his standard trio of funny stories.

We had heard them before, without comprehension. As usual, we sat through the first in grave and baffled silence. As usual, Father convulsed with mirth before he could complete the punch line of the second. The third, not as usual, was rewarded by a spirited neigh from the prim pink lips of my mother's cousin Millicent.

She neighed for several seconds and ended with a triumphant *arpeggio* squeak. It was the squeak,

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I recall, which flipped us. We spun like cartwheels all over the room, we clawed each other's clothes, we turned crimson and we choked. Had Father told fifty stories, all new and uproarious, he could never have achieved such spectacular effects and by the hand of the Lord, he knew it.

His brow grew blacker than summer thunder clouds over Gerrig Llan and his words spat down like hail. "I'll trouble you, Millicent, to keep your blasted animal impersonations to yourself!"

Aunt Milly gulped. Her hands fluttered like blind birds. She hated to be the center of attention. But she could no more retreat from the spotlight now than explain why she occupied it.

From certain of his sulphuric soliloquies, I knew that Father had long felt the time overdue when his wife's cousin should have found herself a husband, preferably one of means. I don't think Millicent was unattractive. But since she swathed herself from chin to ankles in the tweedy puritan garb considered proper uniform for a twenty-five year-old Welsh assistant librarian, it was hard to tell whether she was emphatically curved or indeed if she had any curves at all.

Anyway, the morning after Father's deposition as life and soul of family parties, Aunt Milly at breakfast was seen to be desperately grappling for her fork with a hoof protruding from one thick sleeve. Mother blinked and prepared to swoon. Father glared. My aunt gave a helpless shrug. "I'm terribly sorry." Her apology tiptoed into the sudden tension. "This . . . this came on in the night." A penitent neigh escaped her. "I rather hoped you wouldn't notice."

She neighed again, abandoned her labors with the cutlery, and fled to her room.

Father adjusted his features into a familiar cast. Upstairs over his bed hung a large Victorian print showing the last stand of the South Wales Borderes against the Zulus at Rorke's Drift, its dominant figure the beleaguered lieutenant atop the redoubt, a dashing ideal of pluck and fortitude. Precisely this bearing my father always strove for when confronted by domestic emergency.

"Son." He addressed me with the gruffness of a commander dispatching a scout to bring up the cavalry. "Go and fetch Doctor O'Toole. *On the double!*"

The doctor was for Mother. When I returned with him, Father was buckling his old Sam Browne army belt, another symbolic gesture, and gazing resolutely upstairs where from Aunt Milly's room echoed a rhythmic sound. An anxious drumming. As of hoofbeats.

Doctor O'Toole sighed and turned to Mother but she threw

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one swoon after another, which quickly infuriated O'Toole and drew forth in loud Belfast accents his oft-proclaimed intention of quitting this lunatic land for a sane and profitable practise in Harley Street.

Then Milly's room door banged wide and downstairs galloped a great bay mare. With a shriek Mother fainted again and Dr. O'Toole, about to apply brandy, quickly diverted it to his own gaping mouth.

The mare staggered nervously. Her flanks barged into our century-old grandfather clock and she butted an equally antique Welsh oak dresser. Chinaware flew. A silver cup Father had won in a regimental prize fight tournament toppled to the carpet. His ornate pipe-rack (hand-carved in Italy) followed, scattering English briars, Dutch porcelains and rich brown meerschaums. Uncertain hoofs kicked them right and left.

Throughout, Father stood unbowed in the center of the room, Gibraltar against a storm, though the military wingtips of his delta mustache quivered. Twice he muttered, *"Steady, lads, steady,"* and I could almost hear bugles. Behind him the bruised grandfather clock burst into a frantic chiming though it was nowhere near the hour, and then it slid to silence like a halfwound gramaphone. And Aunt Milly came to rest and braced on trembling legs, and peered self-consciously over Father's squared shoulder.

Thus Millicent's equine debut. Naturally, it summoned Father's strongest qualities, particularly his instinct for exploiting the unexpected, the at first glance *perplexing,* to his own greedy ends. That afternoon his mind was already exploring ways and means as, watched peaceably by Aunt Milly grazing in our cabbage patch, he made over the toolshed out back into a cozy stable.

After we had pushed and prodded her into it, she turned to survey us with modest complacency, as when she used to relate some minor personal triumph attained at the Pontypandy Reading Circle. Father grinned. "Milly, my gal," he said. "You was never in better shape."

Father of course *accepted* what had happened. Despite his brief career in the army (exaggerated by him in retrospect), he believed whole-heartedly in magic. Name me the Welshman who doesn't. But instead of showing the proper awe for it, he took it like everything else in his military stride. And I'm sure he had felt that sooner or later, something strange was bound to happen to Milly . . .

Shy and demure though she was, Milly had positively wallowed in wizardry. Night upon night she would read to me from books old and full of wonder whose words bewitched the very pages so,

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I swear, they turned untouched. And I would shiver with dread, that was no west wind keening across the valley but spirit hounds baying at the moon, and once pajamaed for sleep I would keep my eyes from the bedroom window to avoid a fatal glimpse of death candles flickering in procession around the foot of Cerrig Llan or the Little People up to no good among the ash groves. . . .

Well, Pontypandy soon hummed with gossip. Inevitably it reached the vigilant ears of Pastor Goronwy Jones, familiar to his flock as Goronwy the Sin-killer. That Sunday, with hotter than usual eloquence, he kindled a special hellfire for those who would dabble in dark powers, and although he did not mention us by name, all knew that the target for his fiery shafts was the Pritchard brood, of which I was the only one in chapel. Obedient to the hint of its spellbinder, the congregation turned its multiple gaze on me, and as if pinned by a circle of flamethrowers I squirmed, sizzled, and finally melted in shame.

Rumors spread beyond the Welsh border and attracted a sniffing pack of newspapermen. A disarmament conference in Paris, an earthquake in Peru, and the defrocking of a Sussex bishop for scandalous conduct were elbowed off the front-pages by speculation upon Aunt Milly, the Pontypandy Wonder. Pontypandy, we would say today, hogged the headlines. But not for long. Alien students of psychic phenomena who camped on the slopes of Cerrig Llan caught pneumonia and went home. A professional ghost-hunter materialized at our front door but was himself so rudely interrogated by Father that he vanished more quickly than any apparition. An attractive lady evangelist from California delivered a sermon on Signs and Portents to Goronwy the Sin-killer's fold, then sailed off to America, her choral retinue augmented by some dozen endlessly singing young miners whose conversion had been instantaneous the moment they emerged from the bituminous depths to behold her.

All the visitors in fact departed before Father had a fair chance to profit from the publicity, for nobody really believed the whirl of stories about Milly. Nobody, I mean, who wasn't Welsh.

But Father was far from dashed. One morning after the fuss had died down, he marched off to the library in his best no-surrender manner while I trotted alongside him. The library staff numbered three, not counting Milly, whose absence they sorely lamented. "How is she?" they asked Father.

"Off her oats this morning," he replied curtly and demanded to see their stock of horse books. It was slim. We left with "Turf and Paddock," "Illustrated Horse-breaking" and "The Complete

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Horsewoman," all more than thirty years out-of-print. The last title didn't seem wholly appropriate but for some reason Father savored it with great glee.

He also wrote to London and bought a subscription to *Horse and Track.* And that is how we met Arlington Mellish, wealthy horse breeder, patron of the races, frequent contributor to *Horse and Track.* It was something in a Mellish article, we learned later, that led Father to ponder seriously Aunt Milly's track potential.

"I've written to Mr. Mellish," Father announced one evening, "with a view to introducing our Milly to the Sport of Kings."

Important decisions, Father believed, deserved the grandiose phrase.

Mother was horrified. "*Mogwen Sion Pritchard!* Going the full distance with Father's name shows how shocked she was. "You can't . . . Why, it isn't decent. My own cousin a . . . *racehorse?* Indeed no, not while I still breathe."

Mother's lungs were functioning at their usual robust rate two weeks later as she pored with growing enthusiasm over *Horse and Track* while Father conferred with Arlington Mellish himself, a plumb check-suited Englishman addicted to long cigars which he snatched from his mouth at intervals to talk out of partly closed lips as if his every word were guarded. Since security was impossible to maintain in the Red Lion public house, Mellish and my father ascended Cerrig Llan every morning for a week to conduct literally what a later generation would call summit talks. Each afternoon we all gathered to watch Aunt Milly canter in Madoc Meadow, Mellish emitting rapid grunts of approval from the edge of his mouth, Father pleasurably caressing his mustache. And Mother's eyes gleaming. You couldn't, after all, live sixteen years with my father and remain altogether immune to his genial avarice.

Mellish inspected Milly from forelock to fetlocks. He removed his cigar with lightning speed and snapped, "Good lean head. Muscular loins, nice level croup."

"Croup?" Father frowned.

"Rump," explained Mellish. He slapped Milly by way of further amplification then sprang back as she bared her teeth and lunged for his cigar.

"That's good, too," panted Mellish. "High-spirited. Mark of a thoroughbred." He replaced his cigar.

"Naturally Milly's a thoroughbred," Mother murmured a trifle stiffly.

Mellish continued his appraisal. He wrenched the cigar from his teeth. "Sixteen hands at the withers, I'd say. Hindquarters firmly developed." He bent. "Pasterns smooth and true."

"Pasterns?" Father was strok-

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ing his mustache almost ferociously.

Mellish straightened. "Ankles, if you like."

And that night, before driving off from Pontypandy, he offered Father the use of his training stables in Somerset. "Expect you as soon as you can come," he puffed twice then whipped the cigar aside. "And Milly, of course."

A bubbling cold kept me from school. Mother and Father were in the village shopping for suitable stable wear. Aunt Milly grazed placidly in the garden. I had the house to myself. I don't know what impulse moved me, I had not entered Millicent's old room since her transfer to more fitting quarters. But now, in the quiet of a fading day, I pushed open the door and crept in.

It was a pretty room and neat, with a large window overlooking the valley. On a chair beside the bed rested a tattered book, from its decrepit condition obviously one of the collection bequeathed the previous winter to Pontypandy Library by a Welsh bard turned hermit who had dabbled heavily in Druidic mysticism and at the age of 104 was found dead on Cerrig Llan by a posse of town tipplers chasing a mountain goat for fun.

I opened the book where a pink feather marked the pages. They splintered like rust-flakes between my fingertips, the print was tiny and half-obscured by footnotes, marginal notes, and notes between the lines, the scribbled interjections of the late bard. But I learned a few things, nevertheless. Aunt Millicent hadn't been the first around these parts to lose human form. Twm Shon Catti, a mountain scamp, had beaten her by a century, though what he had turned *into* wasn't clear. There was also a luscious witch named Blodwenwedd who changed rather pointlessly into an owl. Gilvaethwy hadn't known when to stop: he became a deer, then a hog, then a wolf, then a snake, and finally forgot what he had started out as.

Dusk crept down from Cerrig Llan. I found a match, touched flame to an oil lamp's wick and read on. My tongue fought aloud with the difficult words and the house crouched listening, now and then clearing its throat with wind gusts down the chimney.

What I was reading was nothing less than a text-book on sorcery, a handy "how-to" tome on transmorgrification, a step-by-step guide in the art of switching shapes. To that of a lion for strength, a bird for its flight. To a horse for fleetness. A rabbit for . . . for . . . *fecundity.* I didn't know the word but I must have partly divined its meaning for I felt a spasm of regret that Aunt Milly had not become a rabbit.

Transformation was big league magic, attainable only by eating

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the fruit which grew from the sacred grave of Wyn Ab Nudd, the King of the Little People. While you ate, you wished like blazes. That old bard had eaten and wished, then, but as a mountain goat he'd had the singular bad luck to run into a covey of drunks. And Millicent, she too must have found Wyn Ab Nudd's grave, and . . .

At the approaching footsteps of my parents, I snuffed out the lamp, closed the book and ran downstairs, my mind a riot.

"Why," asked Mr. Conway next morning, "are you so interested in Wyn Ab Nudd's grave?"

Bald and beaked, Mr. Conway was our history teacher. If anybody could tell me where Ab Nudd was buried, it had to be old Beaky Conway. And once I knew, then I would go there, snatch some fruit, smuggle it after bed-time into Milly's stable.

I felt sure she must be wishing herself back in her old shape, she had only transmogrified for a bit of daring, she never got much fun out of life really, but a joke was a joke and time now to end it. Moreover, Milly had been with us since before I was born and she was, in some ways, closer to me than either parent. So I was all for restoring her, library tweeds and all.

"I was reading about him," I answered Beaky Conway truthfully.

"Well, child." Conway's nose hooked down at me as if to pierce my heart. I wondered suddenly if Beaky—of course *Beaky*—knew about the grave, had guzzled fruit from it and almost but not quite changed into an eagle. "Nobody knows for sure where King Ab Nudd is buried. Some say beneath Bala Lake. Others, the crown of Cerrig Llan. Personally," he chuckled sepulchrally and I tensed for feathered wings to spread from his underarms and claws to burst through his polished boots. "Personally, I suspect he is buried nearby. Perhaps the mound on Farmer Pugh's land."

The mound. Of course. I had read how in olden times they burned the bodies of the Celtic kings and put the ashes in pots and raised huge heaps of earth and stones over them, and many such mounds we took today to be natural hillocks. "There is such a mound, child," Mr. Conway loomed over me, his eyes flashing down the bony comma between them, "in Farmer Pugh's apple orchard."

The sun was a molten penny dipping beyond distant Bala Lake, the sky overhead a purple silence. The road home to Pontypandy curved out of sight behind the bare slope of Cerrig Llan. I was nearly halfway up the mountain overlooking Farmer Pugh's orchard, and there it was in the mid-

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dle, the *mound,* crested with apple trees and encircled by ash like petrified high priests. A wind stirred and the trees whispered and scraped their branches on the wall as if they knew someone was watching. It was a lonely spot all right, but I had to go through with it, had to climb that wall . .

When I shinned back out again, my pockets were stuffed. Dusk had fallen. Rooks cawed above my head and the nearest tiny lamplight in the Pugh farmhouse glimmered a thousand miles far off. Choir practice echoed remotely from Goronwy the Sinkiller's chapel, but holy music was no match for the unnameable force I suddenly felt tug-o'-warring me back to an age of dark ritual among cromlechs, crags and Druids' circles. The apples I'd poached now tingled through good Welsh cloth to my goose-pimpling skin, and with a yell I ran headlong down the mountain and covered the last mile from Cerrig Llan to our safe house faster than any future Bannister.

And I was too late. Father and Aunt Milly had just departed for Somerset.

Just how Arlington Mellish, who had bought part ownership in Millicent, satisfied the Jockey Club, those traditional arbiters of the British turf, concerning her pedigree when none of her ancestors could be found in the General Stud Book, is and will forever remain a tightly guarded Mellish secret. Anyway, Millicent proceeded to win several county events with ease and it was only a matter of time before Father talked of entering her for the Glamorgan Plate. Father was jut home from Somerset on what he called a brief furlough from the field.

"The Glamorgan Plate?" Mother glanced up from the *Racing Calender* she was studying. "Do you think Milly's ready for the big-time yet?"

"Mellish does," replied Father at once, and rewarded Mother with a smacking kiss for her display of professional caution. I could see he was proud of her.

The main event of the South Wales racing season, the Glamorgan Plate was run at Ely, a mile-long oval course not, in those days anyhow, exactly Ascot. Much of it in fact curved out of general view behind huge commercial hoardings.

But my chief worry of course was to get the apples into Aunt Milly. The original looted fruit had gone moldy by now (magic or not), requiring a second poaching foray into Farmer Pugh's orchard.

I took the apples down to Ely with us, but when I thrust one at Milly during the short period Mother and I were permitted to the paddock, Father swept my hand away and Mellish confirmed sagely from the corner of his mouth that whole apples

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might well give Millicent stomach cramps.

We were briefly introduced to the jockey, Cobey Sharpe, a ginger-headed man no larger than myself whose vocabulary was as stunted as his stature, resulting in a frequent reliance upon the word "strike" and its derivatives. When paddock colleagues warned Sharpe of the odd rumors surrounding Millicent's origin (she went to the post as "Millicent"), he had replied that he had struck a lot of queer things in his lifetime, he didn't care a strike whether she had been a woman, a witch, or even a striking walrus, she was a bay horse now, wasn't she, and strike him happy he would ride her. All the way to victory. This was especially sanguine of Sharpe because he had ridden in the annual Plate for twelve years and never won once.

The crowd roared *they're off*, the sun hurried behind a slab of cloud, and the horses leaped forward.

They thundered past us, streaming down the track, and Millicent shot into the lead at once. Father tossed his hat in the air as if she had already won. Arlington Mellish kept nudging him and firing from the side of his mouth, "Didn't I tell you, Mog?" They were on a first-name basis. "Didn't I ruddy well tell you?"

The horses vanished behind the hoardings. HANCOCK'S—WALES' BEST BEER blotted Millicent from view briefly but she reappeared still leading by a length and evidently with strength in reserve. They vanished again, behind PLAYERS NAVY CUT TOBACCO. Father rocked gently on his heels. "Got the race in her pocket, Milly has," he murmured happily. "Knew a drop of cider would do the trick."

Under the mottled green canopy of a hat she had bought for Ely, Mother's ears quivered. "Cider, Mog?" She turned to him. "Drinking, were you?"

"Not me, woman." He grinned and pointed. "Milly out there." He winked strenuously at me and his mustache ends oscillated. "Brought a pot of Farmer Pugh's cider down with me. Thought Milly might like some too. Dropped a spit or two in her pail. Give her more spirit, like."

At first, his words didn't register with me. Mother though was pained. "Mogwen Pritchard," she scolded, "you know our Milly never touched—"

"Dash it all, woman, it isn't slowing her, is it?" He lowered his field-glasses and gestured at the distant hoardings. "Besides, Arly said a little spit wouldn't do any harm. Right, Arly?"

"Not to worry," Mellish told Mother. "Apple cider never slowed a thoroughbred in my experience."

Apple cider. *Farmer Pugh's apple cider.*

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Grabbing the field-glasses which swung from Father's shoulder I readjusted them and scanned the track. One by one the horses emerged from the shadow of the hoardings. I didn't see Millicent.

"Father." The climax of the race was approaching, and my small voice foundered in the roaring tide of excitement. *"Father,"* I bawled. "Where's Aunt Milly?"

He glared at me, then turned to address nearby spectators. "Is my only son daft?" He retrieved his glasses and squinted. "Where's Aunt Milly indeed." He fingered the focussing screw with mounting panic. "Out in front, she's got to be." His voice trailed off. He rallied gallantly. "Blasted cheap glasses," he snorted. "Blurred or something."

But again he was silent. I looked up. "Not there, is she?" I said briskly.

The race was over. The crowds had gone, except for the Rhondda Valley contingent which had bet heavily on Millicent and were now contemplating Father ominously. Then everyone's gaze turned to the track. A small figure had popped from behind PROTHEROE'S ATHLETIC WEAR and springing towards us assumed clarity as Cobey Sharpe. His face was the color of chalk. So now was his hair. He didn't throttle down as he drew near, and every few paces he gasped, *"O strike . . . O strike me 'appy."*

Angrily Father stepped forward. "Sharpe," he roared, "pull yourself together. Where's your mount, sir?"

"Struck if I know," panted Sharpe. Dodging Father, he accelerated and vanished over the fields into the sunset.

Father's jaw suddenly sagged. We all stared in silence at Aunt Millicent advancing timorously and unclothed across the turf. She clutched a saddle modestly before her and she trailed reins. She must have been wishing awfully fierce to be herself again, in proper shape. So all it had needed was Farmer Pugh's fruit or the juice thereof. And Father had provided

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it. Just a little spit, he had said. Trust Father.

He wheeled and stalked from the track. Mother flung herself at Millicent in welcoming embrace. Men nearby gulped, clenched their fists and averted their eyes. Only Arlington Mellish seemed unshaken. That veteran horse fancier continued to measure Milly with a connoisseur's eye but, I know now, there was a somewhat different glow in it.

The lawsuits with which indignant Welsh gamblers threatened Father were dropped when a Jockey Club inquiry into the affair at Ely ended in frustration. Cobey Sharpe, discovered after a nationwide manhunt, proved wholly incapable of coherent testimony. Moreover, it was as well known to the Jockey Club as to everybody else that in Wales odd things are always happening, so due allowances have to be made.

And Father? He was silent for weeks while Mother berated him: Millicent's racing form had been impeccable, what right had he to tamper with it? But then, he had never fully trusted his own wife's relatives. And he was greedy into the bargain. Well, Mother said, that's what you got for overreaching. Teach him a lesson, it would.

Maybe. Then again, maybe not. Affluent Arly Mellish married Millicent following the Ely fiasco and carried her off to his Somerset retreat. And after a decent pause, we Pritchards descended upon the lovebirds for an indefinite stay during which Father freeloaded like wildfire.

They were happy days. Nostalgic perusal of Arlington's bound *Horse and Track* volumes would alternate with merry banter over whether he had lost his heart to a bay mare in Madoc Meadow or a shapely assistant librarian *sans* uniform on the Ely Racetrack. And Father, reaching for the fruit dish to sample one of Arly's unenchanted Somerset apples, would remark with consummate authority that it had, in any case, been love at first sight.

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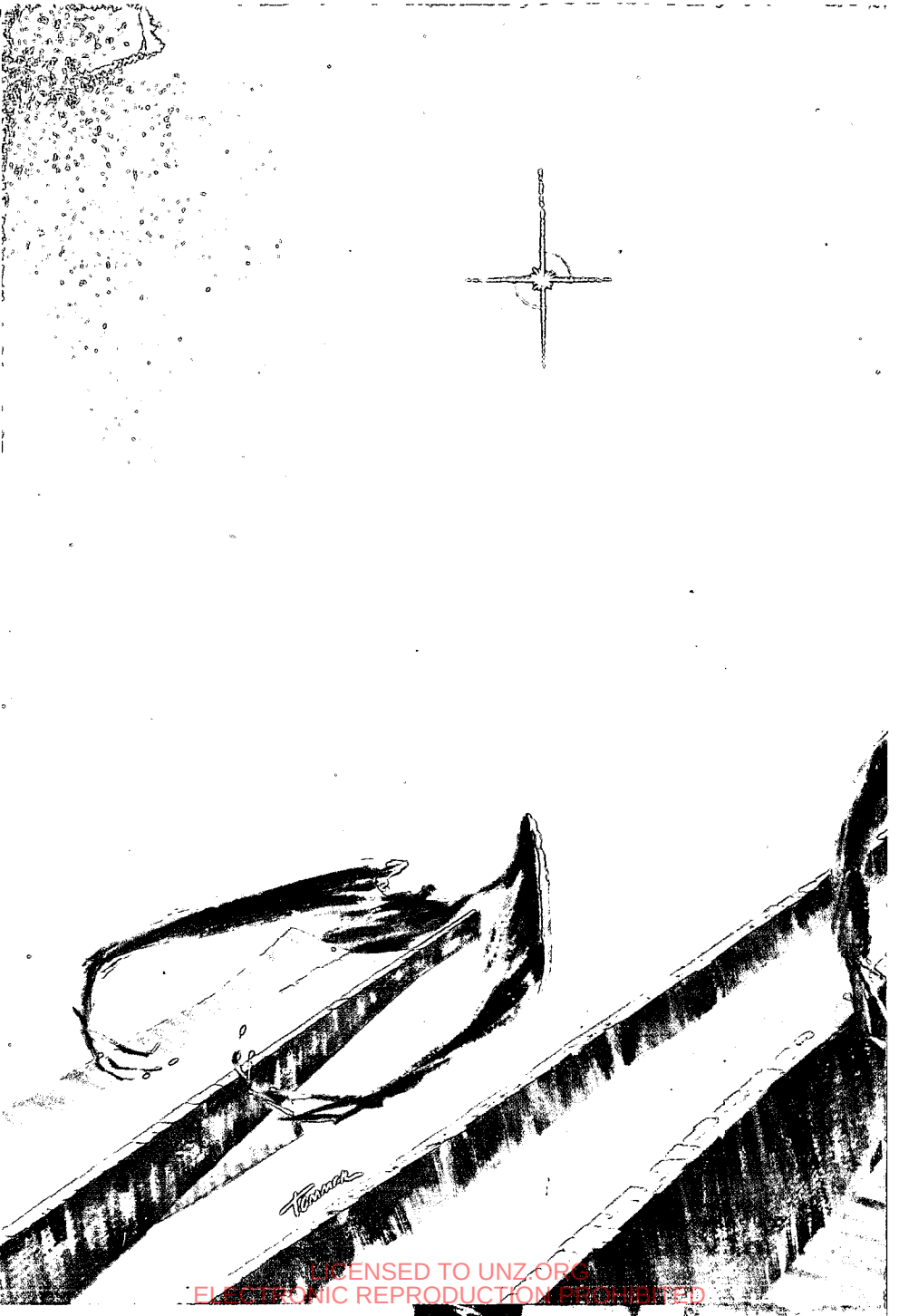

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